

Rhodora

JOURNAL OF THE
NEW ENGLAND BOTANICAL CLUB

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The New England Botanical Club, Inc.

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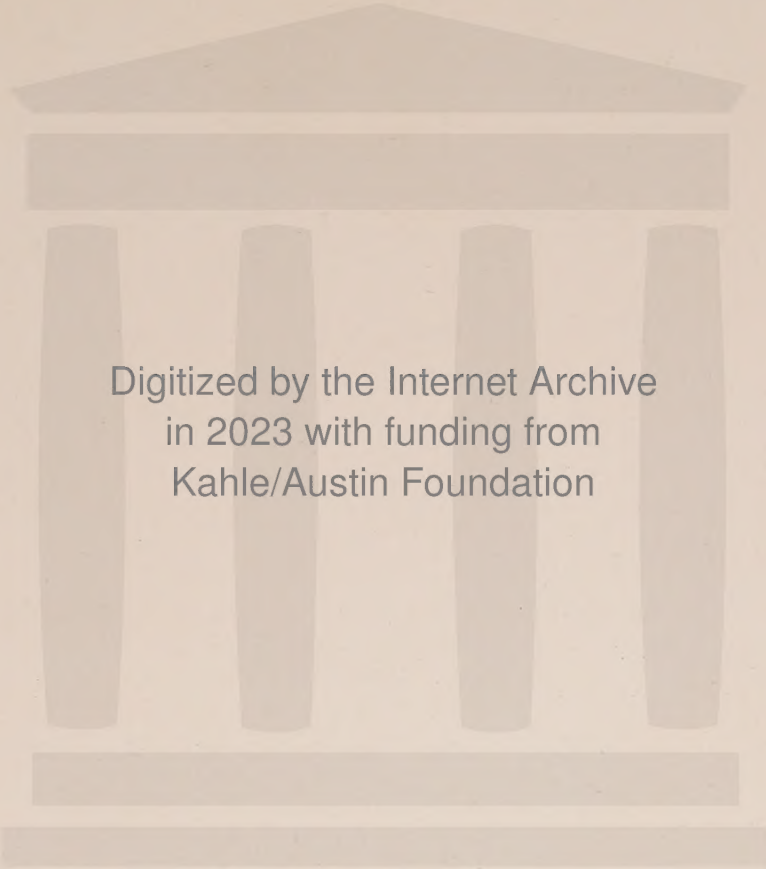
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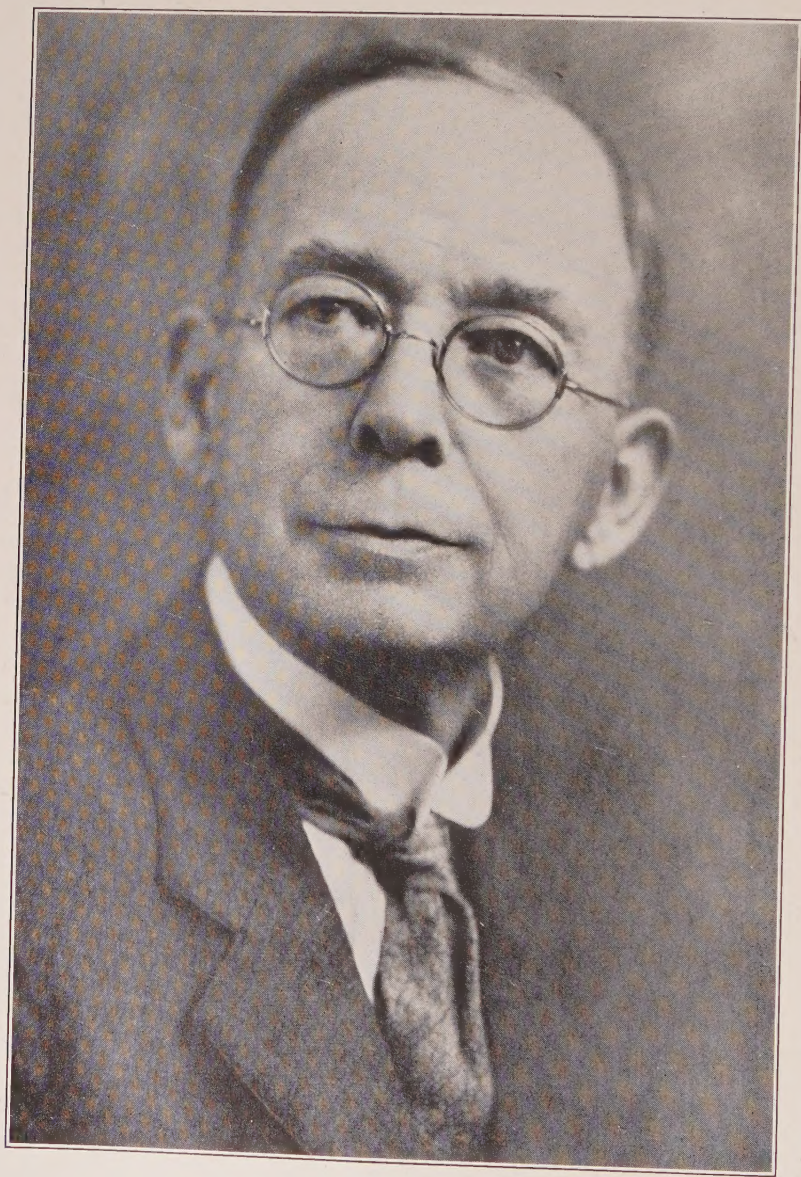
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J. C. Nelson

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JAMES C. NELSON

M. E. PECK

(With portrait)

The subject of this sketch was born in Grant County, Kentucky, December 11, 1867. He received his B. S. degree from Hanover College, Indiana, in 1890, and three years later his master's degree.

He had prepared himself for the teaching profession and spent the remainder of his life in this field. He taught first in Carthage College, Missouri, then in Hull Academy, Iowa, and later at Princeton, Illinois, Dubuque, Iowa, and Marshalltown, Iowa, as high school principal. From the last named place he went to Wenatchee, Washington, and two years later, 1914, to Salem, Oregon, where he spent the rest of his life, as principal of the high school until 1929, when the load of responsibility became too great and he was obliged to retire. He then took the position of registrar, which he held to the time of his death, January 29, 1944. He was married to Anna Van Horssen, of Orange City, Iowa, in 1904.

Mr. Nelson was a man of broad intellectual attainments and a tireless student to the end of his life. He mastered languages with facility, was an accomplished Latin and Greek scholar, read extensively in German, Dutch, French and Portuguese, and was a careful student of French history of the revolutionary period, gathering for his private library a large collection of French histories of the time. Later he became deeply interested in the literature of the South American republics and carried on an extensive correspondence with many of the eminent writers of

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those countries, and accumulated a choice collection particularly of Brazilian works.

With all his intense intellectual activity Mr. Nelson never lost personal touch with the hundreds of young people who were under his supervision. His influence over them was wholesome and profound, and he was respected and loved accordingly. His work with the Salem High School was remarkable. From a very mediocre institution he raised it, largely by his own personal influence, into one of the best schools of its kind in the state.

His botanical work, while pursued with his characteristic enthusiasm, did not constitute a major part of his activity, though he had a keen taxonomic sense. All his published papers and notes on the subject, with one or two exceptions, fall within a period of seven years, 1916-1923. This represents but a small part of his work, however. He once told me with regret of the poor start he had in taxonomy. His teacher in Botany took no interest in his aspirations in this field, and was even annoyed by his propensity for collecting and identifying plants. He persisted, however, and finally became particularly interested in grasses and sedges, accumulating a considerable collection, which he deposited in the herbarium of Willamette University. His later interests were largely concerned with the introduction of foreign plants in Oregon. The number of these exotics is very large, and the part they play in the make-up of the flora of the state is immensely important. In this field his contributions have great value, both in published records and in specimens collected, nearly all of which have been deposited in large herbaria, especially the Gray Herbarium and the National Herbarium.

It is to be deeply regretted that Mr. Nelson's botanical work could not have been continued to the end of his life. A defective heart action made it necessary to discontinue the strenuous field trips that gave zest to his work, and having no large collection or library at hand, there was little he could do to advantage. With that cheerful philosophy that characterized his whole attitude toward life, he took up those intellectual pursuits which ripened, though late in life, into a broad rich scholarship, such as we seldom find in these days.

James C. Nelson was somewhat below medium height, with clear-cut, rather rugged features, quick and energetic in his

movements. He had a deep, resonant voice, with a great range of expression. He possessed a keen sense of humor and a remarkable command of language. He was capable of deep emotions and when strongly moved was a superb public speaker. I have a vivid memory of an April morning a few days after this country entered the first World War, when the call had just come for volunteers. Mr. Nelson had been asked to address the student body of Willamette University at their morning assembly. That address, which I believe was wholly extemporaneous, was the most moving, the most eloquent example of spontaneous oratory I have ever heard. Its effect on his hearers may be judged by the fact that more than a third of the young men of the student body went from the chapel straight to headquarters and enlisted.

He carried on a varied and voluminous correspondence with scientists and scholars in many parts of this country as well as in Europe and South America. His letters have a fine characteristic flavor, whether philosophical, humorous, satirical or merely circumstantial. They represent the man as we knew him best, a superior intellect, an accomplished scholar, with broad, sympathetic human interests.

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WILLAMETTE UNIVERSITY, Salem, Oregon.

LINUM CATHARTICUM IN NEW BRUNSWICK.—There is always a certain interest in tracing the spread of an introduced species; from this point of view, it may be worth while to record the occurrence of *Linum catharticum* L. in New Brunswick. My wife and I found it in considerable quantity in a neglected athletic field at St. Andrew's in July, 1944. We were without collecting apparatus and could take no more specimens than could be carried in an envelope in my pocket; but enough to serve as vouchers for the locality have been deposited in the Gray Herbarium and the New Brunswick Museum.

L. catharticum is native in Newfoundland,¹ has been reported as adventive in eastern Nova Scotia, the central Maine coast and northern Vermont, and is said to be a bad weed at Farnham in southern Quebec—though it is hard to imagine so pretty and fragile-looking a little plant becoming really a nuisance. The St. Andrew's station is, then, not an extension of range, but it is apparently the first record for New Brunswick.—C. A. WEATHERBY.

¹ See *RHODORA*, XXXV. 15 (1933).



Photo. B. G. Schubert.

RUELLIA CAROLINIENSIS, var. *TYPICA*: FIG. 1, portion of flowering plant, $\times 1$; FIG. 2, flowering tip, $\times 1$; FIG. 3, summit of internode, $\times 4$; FIG. 4, upper surface of leaf, $\times 10$; FIG. 5, lower surface of leaf, $\times 10$



Photo. B. G. Schubert.

RUELLIA CAROLINIENSIS, VAR. *TYPICA*: FIG. 1, summit of plant, to show characteristic divergent branching, $\times 1$; FIG. 2, calyx and capsule, $\times 2$; FIG. 3, portion of calyx and capsule, $\times 10$

RUELLIA IN THE EASTERN UNITED STATES

M. L. FERNALD

(Continued from page 63)

11. R. CAROLINIENSIS (Walt.) Steud. Erect, simple to divergently or strictly branched, 1-9 dm. high, canescent-pilose, villous, hirsute, puberulent or rarely glabrescent; the upper internodes greatly abbreviated, the lower more elongate, at least the upper with crowded leaves and glomerules: lowest leaves more or less obovate and rounded at summit; middle and upper leaves distinctly petioled, lanceolate to ovate, oval, elliptic or oblong, commonly strigose above, either strigose, hispid, pilose or glabrescent beneath: glomerules very short-peduncled to sessile, mostly crowded, at 1-4 upper nodes (or in var. *dentata* up to 9 pairs of glomerules extending down often to base of plant): bracts oblong-lanceolate to elliptic, narrow, nearly equaling to shorter than calyx: calyx-segments linear-setaceous, 1.3-2.5 cm. long, usually shorter than corollatube, copiously ciliate (more rarely eciliate): corolla lilac- or lavender-blue, 2-5 cm. long; the slender tube 1.3-2.7 cm. long; the campanulate-obconic throat 1-1.5 cm. broad at summit; expanded limb 2-4 cm. broad: capsule glabrous, pilose or hirtellous, 1.2-1.7 cm. long; seeds orbicular to oval, 3 mm. long.—Our most polymorphous species, consisting of several locally constant but marginally intergrading varieties and many minor but morphologically consistent forms. The chief variations are the following.

- a. Stem simple or with mostly strongly divergent branches from lower and median axils, these branches commonly elongate and flowering at summit; the upper internodes canescent-pilose to softly villous; leaves elliptic, subrhombic, oval or narrowly ovate, membranaceous and pliable, with more or less undulate surfaces (slightly crumpled even when carefully pressed); calyx-segments canescent-puberulent to villous on back; corolla 2.5-5 cm. long; capsule pilose-hirtellous to glabrous....b.
- b. Upper internodes of stem and branches copiously white-pilose and commonly white-villous; leaves white-villous to canescent-pilose beneath when young, copiously strigose above; capsule usually densely pubescent...11a. Var. *typica*.
- b. Upper internodes merely short-pilose or with only few elongate hairs; leaves glabrescent or merely sparsely hirtellous beneath; capsule usually glabrous or promptly glabrate.
 Calyx-segments ciliate.....11b. Var. *semicalva*.
 Calyx-segments eciliate.....11c. Var. *semicalva*, forma *deltonsa*.

- a. Stem simple or with few ascending to suberect (very rarely strongly divergent) branches, spreading-hirsute, pilose, puberulent or glabrescent, the branches when borne from the middle and upper axils rarely prolonged or floriferous; leaves flat (not crumpled when carefully pressed), lanceolate to ovate, oval, elliptic or oblong, membranaceous and flexible to thickish, hard and firm, strigose to hispid along principal veins or quite glabrous beneath, remotely strigose to glabrescent above; corolla 2-4.5 cm. long; capsule usually glabrous....c.
- c. Leaves of upper more or less approximate nodes chiefly longer than those below, entire or not very dentate; 1 or 2 (rarely 3 or 4) nodes of the main axis floriferous, the lowest floriferous ones from closely crowded to 10 (-15) cm. apart; stem simple, only rarely branched....d.
- d. Longer leaves of the uppermost nodes broadly lanceolate to oval, ovate or elliptic, if lance-subacuminate 1.5-4.5 cm. broad; calyx-segments glabrous or nearly so on back; summit of throat of corolla 0.7-1.5 cm. broad, expanded limb 2.5-4 cm. broad....e.
- e. Leaves membranaceous, pliable, oval, ovate or elliptic to broadly lanceolate....f.
- f. Stem stoutish to slender, 1-5 mm. thick at base, 1-9 dm. high; larger leaves 5-12 cm. long, if obtuse mostly more than 7 cm. long....g.
- g. Leaves strigose or hispid on veins beneath; calyx-segments ciliate.
Internodes of stem (or some of them) copiously spreading-hirsute.....11d. Var. *membranacea*.
Internodes puberulent to glabrescent, at most with remote elongate trichomes
11e. Var. *membr.*, forma *breviberbis*.
- g. Leaves glabrous beneath.
Calyx-segments ciliate; internodes of stem usually pubescent; upper surfaces of leaves usually strigose.....11f. Var. *membr.*, forma *hypopsila*.
Calyx-segments eciliate; internodes glabrescent or glabrous; upper surfaces of leaves glabrous or essentially so.....11g. Var. *membr.*, forma *laevior*.
- f. Stem filiform, 1-2 mm. thick at base, 1-2 (-4) dm. high; leaves membranaceous, elliptic to oblong, the larger ones 2-6 cm. long, obtuse to rounded at apex.
Calyx-segments ciliate; internodes (or some of them) of stem copiously villous-hirsute with divergent hairs.....11h. Var. *nanella*.
Calyx-segments eciliate; internodes glabrescent or merely puberulent.....11i. Var. *nan.*, forma *eciliata*.
- e. Leaves subcoriaceous, firm and stiff, lanceolate to lance-ovate, subacuminate; stem rigid, 4.5-9 dm. high.....11j. Var. *cheloniformis*.
- d. Longer leaves of the uppermost nodes narrowly lanceolate to lance-linear, 0.5-1.5 (-2) cm. broad; stem slender, 1.5-7 dm. high; calyx-segments canescent-pilose to glabrescent; throat of corolla 5-10 mm. broad at summit, expanded limb 2-3.5 cm. broad....11k. Var. *salicina*.
- c. Leaves of flowering summit gradually much reduced in size; 4-9 nodes of well developed main axis bearing glomerules; all but upper internodes elongate; stem frequently with



Copy, slightly reduced, of the Dillenian plate of RUELLIA STREPENS, CAPITULIS COMOSIS



Photo. B. G. Schubert.

RUELLIA CAROLINIENSIS, var. *SEMICALVA*: FIG. 1, TYPE, $\times 3/7$; FIG. 2, portion of internode, $\times 10$; FIG. 3, lower, and FIG. 4, upper surface of leaf, $\times 10$; FIG. 5, calyx and capsule, $\times 2$; FIG. 6, calyx-segment and portion of capsule, $\times 10$

elongate floriferous ascending basal branches; median leaves oblong, oblong-lanceolate, ovate or elliptic, subequal, subcoriaceous, often undulate-dentate. . . . 111. Var. *dentata*.

11a. Var. **typica**. Stem when well developed 1.5–7 dm. high, simple, or with divergently to horizontally spreading elongate branches mostly flowering at tips, obtusely angled, canescent-pilose to copiously white-villous; middle and lower internodes greatly elongated (5–18 cm. long), the uppermost greatly abbreviated: principal leaves elliptic, subrhombic, oval, ovate or ovate-lanceolate, membranaceous, slender-petioled, obtuse to acute, white-villous to villous-hirsute or canescent-pilose beneath when young, closely strigose above; the blades 3–10 cm. long and 1.5–4 cm. broad, with somewhat undulate surface, thus crumpled or puckered in drying: glomerules very short-peduncled, from 1–3 approximate or subapproximate upper nodes and at tips of longer branches, 2–many-flowered: bracts oblong-lanceolate to narrowly elliptic, nearly equaling to shorter than calyx: calyx-segments linear-setaceous, white-villous or canescent-pilose on back, villous-ciliate, 1.3–2.3 cm. long, usually considerably shorter than corolla-tube: corolla bluish-lavender, 2.5–5 cm. long; the slender tube 1.3–2.7 cm. long, the campanulate-obconic throat 1–1.5 cm. thick at summit; expanded limb 2.5–3.5 cm. broad: capsule often densely pilose-hirtellous, sometimes glabrous, 1.4–1.7 cm. long.—*R. strepens*, *capitulis comosis* Dillenius, Hort. Elth. ii. 330, t. 331 (1732). *R. strepens* L. Sp. Pl. 634 (1753), in part, not L. Mantiss. Alt. 422 (1771). *Anonymos caroliniensis* Walt. Fl. Carol. 168 (1788). *Pattersonia caroliniensis* (Walt.) J. F. Gmel. Syst. 925 (1791), the binomial wrongly ascribed to Walter, p. 167 (instead of 168) with a brief summary of Walter's generic diagnosis. *R. hybrida* Pursh, Fl. Am. Sept. ii, 420 (1814); LeConte in Ann. Lyc. N. Y. i. 140 (1824), in part only; Small, Fl. Se. U. S. 1084 (1903) and Man. 1229 (1933). *R. strepens* sensu Ell. Sk. ii. 109 (1822), not L. emend. *R. caroliniensis* (Walt.) Steud. (as *carolinensis*), Nom. ed. 2, ii. 481 (1841), based only on "*Patersonia carolinensis* Walt.", without further reference, this obviously copied (with change of spelling of both names) directly from J. F. Gmelin; Blake in RHODORA, xxii. 134 (1915), in part, excluding *R. ciliosa* and *R. carol.* var. *parviflora* (Nees) Blake and all synonyms cited under it. *Dipteracanthus strepens*, γ. *Dillenii* Nees in DC. Prodr. xi. 122 (1847), at least as to Dillenian plant. *D. ciliosus*, β. *hybridus* (Pursh) Nees l. c. 123 (1847), in part. *D. Mitchillianus* Nees l. c. (1847). *R. ciliosa*, var. *hybrida* (Pursh) Gray, Syn. Fl. ii¹. 326 (1878), in part.—Sandy woods, Florida, north to eastern South Carolina; Tennessee, Kentucky and eastern Arkansas (unless otherwise noted, specimens distributed as *R. hybrida*). SOUTH CAROLINA: LANCASTER CO.: rocky hillside, 40-

Acre Rock, west of Taxahaw, *Dorothy Huntley*, no. 256 (Duke). HORRY CO.: low woods near Myrtle Beach, July 13, 1932, *Coker & Totten* (NC). GEORGETOWN CO.: sandy woods, Brookgreen Gardens, *F. G. Tarbox*, no. 567 (US). WILLIAMSBURG CO.: rich woods, 10 miles southeast of Gourdin, *Godfrey & Tryon*, no. 433. BERKELEY CO.: Santee Canal, *H. W. Ravenel*, as *R. strepens*, changed by Asa Gray to *R. ciliosa*, var. *hybrida*. CHARLESTON CO.: Charleston, June, 1902, *Wm. Palmer* (US), as *R. parviflora*. BEAUFORT CO.: Bluffton, 1872, *Mellichamp* (Mo, US); St. Helena, 1878, *Laura Towne* (Pa), as *R. ciliosa*. GEORGIA: WITHOUT STATED LOCALITY: *Chapman*, CHATHAM CO.: Savannah, *Mrs. Say*. FLORIDA: WITHOUT DEFINITE LOCALITY: E. Florida, *Chapman* (NY), as *Dipteracanthus Mitchillianus*. DUVAL CO.: dry rich ground near Jacksonville, *A. H. Curtiss*, no. 4764 (Mo, NY, US), as *R. strepens*, one sheet changed to *R. hybrida*, another to *R. parviflora*; St. Nicholas, May 12, 1896, *L. H. Lighthipe* (NY), as *R. ciliosa*, April 20, 1897, *J. R. Churchill*; vicinity of Mayport and Jacksonville, *H. D. Keeler* (NY), as *R. ciliosa*; Hummock, *Fredholm*, no. 5150, as *R. ciliosa*. ST. JOHNS CO.: May 20-22, 1885, *G. C. Whitlock*. CLAY CO.: dry oak woods, Green Cove Springs, April 14, 1939, *W. A. Merrill* (Mo), as *R. ciliosa*. PUTNAM CO.: Crescent City, March, 1880, *G. Marten* (Phil). ALACHUA CO.: open pine woods 1 mile north of Newberry, *E. Perot Walker*, no. 1862 (Phil), as *R. humilis*; high hummock, Burnett's Lake, April 30, 1939, *W. A. Merrill* (Mo); Gainesville, 1887, *M. F. Price*, as *R. ciliosa*, var. *ambigua*; May 12, 1897, *Joseph Crawford* (Phil.), as *R. ciliosa*; hammock near Gainesville, May 31, 1937, *W. A. Merrill* (Mo), as *R. ciliosa*. VOLUSIA CO.: Port Orange, *F. C. Straub*, no. 120, as *R. ciliosa*, var. *ambigua*; sandy soil, Ormond, April 23, 1903, *H. A. Purdie*, as *R. ciliosa*, altered to *R. humilis*; lush growth by road, north of Ormond, May 16, 1943, *E. H. Butts & Oakes Ames* (Ames); in shade or half-shade, Ormond Beach, May 12, 1943, *Butts & Ames* (Ames); dry soil, Crescent City, June 28, 1943, *E. H. Butts*, as *R. parviflora*. LAKE CO.: vicinity of Eustis, *Nash*, nos. 242 (US) and 1801, July, 1894, *A. S. Hitchcock* (Mo); pinelands east of Eustis, *J. K. Small*, no. 8667 (NY), as *R. parviflora*; dry wood-border, Hiawatha Lake, *Wiegand & Manning*, no. 2932, as *R. parviflora*. SUMTER CO.: Lake Ashtachula, March 29, 1879, *J. D. Smith* (US), as *R. strepens*. HERNANDO CO.: rich open woods, Brooksville, April 9, 1927, *Hugh O'Neill* (Mo). POLK CO.: Peace Creek, March, 1880, *J. D. Smith* (US), as *R. strepens*, dry pineland, April 12, 1894, *L. B. Ohlinger* (Mo), as *R. strepens*. OSCEOLA CO.: sandy soil, Kissimmee, April 5, 1936, *Mary L. Singletary* (Duke). MANATEE CO.: Manatee, *S. M. Tracy*, no. 6758 (NY, US). DADE CO.: pine woods near Rockdale, *J. L. Fennell*, no. 270 (USNA). KENTUCKY: OWEN CO.: about 1

mile north of Scott Co. line, *E. L. Braun*, no. 3204 (Braun). JEFFERSON CO.: 3 miles south of Louisville, July 5, 1892, *L. S. Bergman*, in part (Mo), as *R. ciliosa*. CALLOWAY CO.: upland oak woods just west of the Tennessee River, *Gleason*, no. 8950 (NY). TENNESSEE: COCKE CO.: Newport, June 6, 1925, *O. M. Freeman* (USNA). KNOX CO.: Knoxville, *Ruth*, no. 101, as *R. strepens*. FRANKLIN CO.: Cowan, *Biltmore Herb.*, no. 849^e (US), as *R. ciliosa*; woods north of Sheridan, June 6, 1897, *H. Eggert* (Mo). DAVIDSON CO.: Ridge Top, July 13, 1897, *Eggert* (Mo). SHELBY CO.: Memphis, *Fendler*, as *R. ciliosa*. ARKANSAS: ST. FRANCIS CO.: Crowley's Ridge, Forrest City, *Demaree*, no. 15,137 (Mo), possibly, when more material available, to be placed elsewhere. PLATES 861–863; MAP 14.

11b. Var. **semicalva**, var. nov. (TAB. 864), var. *typicae* similima; caule vix villosulo-hirsutis; foliis subtus glabrescentibus vel sparse strigosis; capsulis plerumque glabris.—Of much wider range, from central Florida to South Carolina, locally to southeastern Virginia, westward to eastern Texas. VIRGINIA: SOUTHAMPTON CO.: rich woods, Violet Hill, near Devil's Elbow, June 23, 1936, *Fernald, Long & Smart*, no. 5922 (TYPE in Herb. Gray; ISOTYPES in Herb. Phil. Acad., etc.), as *R. ciliosa*; about Franklin, *Heller*, no. 953 (US), as *R. ciliosa*. NORTH CAROLINA: CHATHAM CO.: dry soil, Silver City, *Biltmore Herb.*, no. 849^b (US), as *R. ciliosa*. COLUMBUS CO.: grassy woodland at Lake Waccamaw, *Godfrey & Shunk*, no. 4170, as *R. parviflora*. NEW HANOVER CO.: Wilmington, June, 1894, *J. M. Macfarlane* (Pa). SOUTH CAROLINA: GEORGETOWN CO.: shady, weedy waste place, Georgetown, *Godfrey & Tryon*, no. 1683. WILLIAMSBURG CO.: rich woods, 10 miles southeast of Gourdin, *Godfrey & Tryon*, no. 433. BERKELEY CO.: railroad right-of-way, south of Moncks Corner, *R. F. Martin*, no. 1130 (USNA), as *R. parviflora*. CHARLESTON CO.: near Charleston, Aug. 1886, *L. R. Gibbes* (NY), as *R. parviflora*. ANDERSON CO.: dry rich woods, Anderson, *John Davis*, no. 9193 (Mo), as *R. parviflora*. GEORGIA: WITHOUT DEFINITE LOCALITY: middle Georgia, *T. C. Porter*. JEFFERSON CO.: July 8, 1897, *M. H. Hopkins* (NY), as *R. parviflora*. LIBERTY CO.: Sunbury, *LeConte* (NY), as *R. ciliosa*. JASPER CO.: fence-corner, 1846, *T. C. Porter* (approaching var. *dentata*). COBB CO.: moist field near brook, Marietta, June 12, 1885, *R. N. Larrabee*. WALKER OR DADE CO.: foot of Lookout Mt. near road out of St. Elmo, June 6, 1921, *O. M. Freeman* (USNA). FLORIDA: LAKE CO.: clay soil, vicinity of Eustis, *Nash*, no. 242. SUMTER CO.: March 29, 1879, *J. D. Smith* (US), as *R. strepens*. CITRUS CO.: moist shaded rock north of Pineola, *H. J. Oosting*, no. 135 (Duke). BREVARD CO.: hammock along Indian River, Coco, *J. K. Small*, no. 8727. SEMINOLE CO.: moist grassy clearing, south of Sanford, *Moldenke*, no. 184 (Duke, Mo, NY, Pa), as *R. parviflora*. POLK CO.: sandy

roadside, Winter Park, March 8, 1923, *Hunnewell*, no. 8732 (FWH). HILLSBORO CO.: Tampa, May, 1876, *A. P. Garber* (Phil, US), as *Dipt. ciliosus*. LEON CO.: near Tallahassee, *N. K. Berg* (NY), as *R. parviflora*. WAKULLA CO.: prope St. Marks, Mai, 1843, *Rugel*, with an unpublished name (NY). CALHOUN CO.: Iola, *Chapman* (Mo). TENNESSEE: HAMILTON CO.: old fields, Sequach Valley, Biltmore Herb., no. 849^h (US), as *R. ciliosa*. ALABAMA: DEKALB AND ETOWAH COS.: Lookout Mt., July 6 and 8, 1898, *H. Eggert* (Mo). ETOWAH CO.: Gadsden, 1878, *G. R. Vasey* (US), as *R. ciliosa*. CULLMAN CO.: woods, June and Sept., 1897, *H. Eggert* (Mo). HALE CO.: Greensboro, 1857, *Sereno Watson*, as *R. ciliosa*, var. *ambigua*. LEE CO.: dry pine woods, *J. D. Smith*, no. 1940 (US), as *R. strepens*. MONTGOMERY CO.: low abandoned field near Montgomery, June 18, 1932, *J. K. Edwards* (Pa). DALLAS CO.: 1879, *Wm. Trelease* (Mo), as *Dipt. ciliosus*. CONECAH CO.: Evergreen, *Baker & Earle*, no. 39 (US), as *R. ciliosa*. MONROE CO.: dry hills, July 23, 1885, *Mohr* (US), as *R. ciliosa*. MOBILE CO.: Mobile, 1905, *W. C. Dukes*, as *R. parviflora*; pine barrens, Spring Hill, *E. W. Graves*, no. 498, in part (Mo). MISSISSIPPI: GRENADA CO.: moist wooded hillside, Pay West's Lake, May 27, 1932, *Vena Millsaps* (NC), as *R. ciliosa*. OKTIBBEHA CO.: Starkville, July 26, 1890, *S. M. Tracy*, as *R. strepens* (NY)—plant habitally resembling var. *dentata*. LAUDERDALE CO.: Meridian, *S. M. Tracy*, no. 3271 (NY), resembling var. *cheloniformis*. JACKSON CO.: Ocean Springs, *Josephine Skehan* as *Seymour & Earle*, no. 154, as *R. ciliosa*, var. *ambigua*, June 7, 1895, *Skehan*, as *R. ciliosa* (simulating var. *cheloniformis*). HARRISON CO.: Biloxi, *S. M. Tracy*, nos. 4944 (Mo, NY, US—very mixed no., some specimens nearly var. *salicina*), 6434 (NY, US), 6435 (G, Mo, NC, NY, US—some plants nearly var. *salicina*, others approaching var. *nanella*), as *R. strepens*. COPIAH CO.: Brushy Creek, Crystal Springs, May 18, 1925 (US), as *R. parviflora*. LOUISIANA: ST. TAMMANY PARISH: vicinity of Covington, *Bro. Anect*, no. 65 (US), as *R. parviflora*; *Bro. G. Arsène*, no. 12,240 (US), as *R. parviflora*. IBERIA PARISH: moist open grassy woods, Avery Island, *D. S. & H. B. Correll*, no. 9525. RAPIDES PARISH: Alexandria, *Hale* (NY), as *R. strepens*, corrected by Britton to *R. ciliosa*. NATCHITOCHES PARISH: woods near Marthaville, May 5, 1893, *Langlois* (US), as *R. ciliosa*. TEXAS: UPSHUR CO.: sandy woods, Big Sandy, *Reverchon*, no. 2536 (Mo), as *R. parviflora*. LIBERTY CO.: low woods, Dayton, *E. J. Palmer*, no. 7768 (Mo), as *R. parviflora* (plant resembling large-leaved var. *membranacea*). HARRIS CO.: Houston, *G. L. Fisher*, no. 81 (US), as *R. parviflora*. PLATE 864; MAP 15.

11c. Var. SEMICALVA, forma **detonsa**, f. nov., caule, foliis, calycis segmentibusque minute canescento-puberulis eis ecilia-



Photo. B. G. Schubert.

RUELLIA CAROLINIENSIS, var. MEMBRANACEA: FIG. 1, TYPE, $\times \frac{1}{2}$; FIG. 2, upper, and FIG. 3, lower surface of leaf, $\times 10$; FIG. 4, flowering tip, $\times 1.7$; FIG. 5, portion of calyx and capsule, $\times 10$; FIG. 6, fruiting summit, $\times 2$



Photo. B. G. Schubert.

RUELLIA CAROLINIENSIS, var. MEMBRANACEA: FIGS. 1-3, summits of plants, to show leaf-variation, $\times 1$

tis.—FLORIDA: roadside, Sebring, Highland Co., March 4, 1924, *Hunnewell*, no. 9044 (TYPE in Herb. Hunnewell).

11d. Var. **membranacea**, var. nov. (TAB. 865 et 866), caule 1–9 dm. alto ad basin 1–4 mm. diametro, internodiis valde divergenterque hirsutis; foliis membranaceis 5–12 cm. longis supra strigosus subtus ad venas strigosus vel hirsutis, ovalibus, ovatis, ellipticis vel late lanceolatis obtusis vel subacutis; calycis segmentis dorso glabris vel glabrescentibus longe ciliatis—*R. parviflora* sensu Small, Fl. Sc. U. S. 1085 (1903) and sensu Britton in Britton & Brown, Ill. Fl. ed. 2, iii. 242 (1913), excl. fig., which is of *R. Purshiana*; not *R. parviflora* (Nees) Britt. Man. 854 (1901), at least as to basonym, *Dipteracanthus ciliosus*, var. *parviflorus* Nees.—Woods, openings and clearings, either calcareous or subacid, north-central South Carolina to south-central Tennessee, north to southern New Jersey, southeastern Pennsylvania, northern Maryland, West Virginia, southeastern Ohio and north-central Kentucky (unless otherwise noted, distributed as *R. caroliniensis*, *ciliosa* or *parviflora*); usually commoner than other vars. northward. NEW JERSEY: CAPE MAY co.: woods south of Mill Lane, north of Cape May City, Aug. 10, 1918, *W. Stone* (Phil); north of Cape May, Sept. 13, 1901, *C. S. Williamson* (Phil); Cape May Court House, Aug. 6, 1909, *Van Pelt* (Phil); Cold Spring, Sept. 13, 1908, *C. S. Williamson* (Phil), July 18, 1909, *Van Pelt*, no. 12,199 (Pa). PENNSYLVANIA: YORK co.: below McCall's Ferry, July 11, 1895, *Joseph Crawford* (Phil). DELAWARE: NEW CASTLE co.: Aug. 9, 1866, *A. Commons* (NY), as *R. strepens*. KENT co.: moist woods west of Woodland Beach, *R. R. Tatnall*, no. 1462. SUSSEX co.: Rehoboth, July 8, 1908, *C. S. Williamson* (Pa, Phil); sandy woods east of Milford, July 16, 1896, *A. Commons* (Pa, Phil). MARYLAND: CECIL co.: Elk Neck, June 24, 1923, *W. L. Abbott* (Phil); woods, high bluff west of Georgetown, Aug. 6, 1938, *Mrs. L. R. Holmes* (Pa); Leslie, July 15, 1891, *Crawford* (Phil); flats, Conowingo, July 29, 1924, *Crawford*; Conowingo, July 25, 1907, *J. J. Carter* (Phil). KENT co.: near Chestertown, July 11, 1907, *Shreve*, no. 1696 (US). QUEEN ANNE co.: Aug. 20, 1900, *G. Vanatta* (Phil). TALBOT co.: railroad ballast, northwest of St. Michaels, *R. R. Tatnall*, no. 386 (Pa); edge of woods, west of Easton, *E. C. Earle*, nos. 2251 (Pa) and 3698 (Pa). WICOMICO co.: Salisbury, July 14, 1904, *J. J. Carter* (Phil). WORCESTER co.: roadside through swamp, north of Dividing Creek Bridge, *G. F. Beaven*, no. 455 (Duke). HARFORD co.: low, moist woods, Creswell, July 28, 1883, *L. W. Brosius* (Pa). BALTIMORE co.: Baltimore, *Leroy* (NY). PRINCE GEORGE co.: Hyattsville, Aug. 13, 1904, *Steele* (Mo). CALVERT co.: low swampy woods, North Bay, Chesapeake Bay, *Muenschner*, no. 3867 (Mo). MONTGOMERY co.: edge of woods, July 7, 1901, *M. W. Lyon, Jr.* (US). WASHINGTON

co.: island above Harper's Ferry, *F. W. Pennell*, no. 2430 (Phil).
 DISTRICT OF COLUMBIA: in vicinis Washington, June 29, 1884, *L. F. Ward*; thickets near Ivy City, June 14, 1891, *F. Blanchard* (Mo), as *R. strepens*; open woodland, Washington and vicinity, July 16, 1896, *Steele* (NY, Mo); Congress Heights, *Philip Dowell*, no. 7012. WEST VIRGINIA: NICHOLAS co.: dry bank, Peter Creek, *Millspaugh*, no. 596 (NY). MASON co.: along Ohio River, near Pum Roy, *E. E. Berkley*, no. 913 (Mo). CABELL co.: abandoned wooded pasture, Pleasant Valley, *Gilbert*, no. 483. LINCOLN co.: near Mills School, *E. E. Berkley*, no. 969 (Mo). WAYNE co.: dry hillside, Buffalo Creek, *Lewis Plymale*, no. 95. MC DOWELL and WYOMING COS.: woods along Indian Ridge, *E. L. Morris*, no. 1172 (US). VIRGINIA: FAIRFAX co.: Falls Church, June 23, 1872, *J. J. Carter* (Phil). ALEXANDRIA co.: Naucks, *Pennell*, no. 2456 (Phil); Fort Myer, July 14, 1895, *E. A. Mearns* (NY), as *R. strepens*. NORTHAMPTON co.: sandy woods back of the dunes, Savage Neck, *Fernald & Long*, no. 5453. MIDDLESEX co.: bank of Rapahannock River at Gray's Point, *A. B. Massey*, no. 2115 (VPI). MATHEWS co.: sandy open soil along North End Branch, "Fort Nonsense", south of Soles, *Wherry & Pennell*, no. 12,616, in part (Phil). GLOUCESTER co.: Beaver Swamp Creek, north of Gloucester, July 5, 1924, *H. B. Meredith* (Phil). YORK co.: steep wooded bank, York River, above Mt. Folly, *Fernald & Long*, no. 13,459. JAMES CITY co.: rich woods and slopes by James River, Grove Landing, southeast of Grove, *Fernald & Long*, no. 13,457; moist rich soil in woods, west side of Jones Millpond, Williamsburg, *Grimes*, no. 3887. CHARLES CITY co.: wooded slope by James River, at "Four Oaks", below Harrison Point, *Fernald & Long*, no. 13,149. PRINCESS ANNE co.: rich deciduous woods east of Little Creek, *Fernald & Long*, no. 4193; sandy woods, northern end of Knott's Island, *Fernald & Long*, no. 4194, in part. NORFOLK co.: Portsmouth, June, 1840, in part, *Rugel* (NY). ISLE OF WIGHT co.: thicket back of sandbeach of Burwell's Bay, James River, below Rushmere (Fergusson's Wharf), *Fernald & Long*, no. 13,150. SURRY co.: rich calcareous wooded ravines along James River, Claremont, *Fernald & Long*, nos. 13,762 and 13,837; rich calcareous wooded ravine near James River, northwest of Chippokes, July 25, 1941, *Fernald & Long*, no. 13,458. SOUTHAMPTON co.: border of sandy woods south of Applewhite's Church, *Fernald & Long*, no. 13,153. SUSSEX co.: border of woods near Nottoway River, Green Church Bridge, southwest of Owen's Store, *Fernald & Long*, no. 12,472 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.). GREENVILLE co.: bottomland woods along Meherrin River, southeast of Gaskins, *Fernald & Long*, no. 13,151. DINWIDDIE co.: low woods near Mt. Olivet Church, *Fernald & Long*, no. 14,021. AMELIA co.: *J. B. Lewis*, nos. 114 and 733 (VPI). BRUNSWICK co.: bottomland

woods near Western Bridge, Meherrin River, south of Edgerton, *Fernald & Lewis*, no. 14,498. CAMPBELL CO.: vicinity of Lynchburg, July 1, 1892, *Britton, Britton & Vail* (NY). BEDFORD CO.: July 8, 1871, *A. H. Curtiss* (Mo, NY). ROCKBRIDGE CO.: "Near the natural bridge in rich soil along fences", *Pursh* (Phil), correctly called "*Anonymos carolinensis* Walt."; Natural Bridge, *Margaret P. Russell*. NORTH CAROLINA: PASQUOTANK CO.: oak-pine-beech woods south of Elizabeth City, *Wiegand & Manning*, no. 2929. TYRRELL CO.: open woodland, Columbia, *Godfrey*, no. 4322. PITT CO.: pine woodland near Farmville, *Godfrey*, no. 4278. WARREN CO.: Warrenton, July 19, 1924, *H. B. Meredith* (Phil). GRANVILLE CO.: wet meadow, Oxford, *M. F. Buell*, no. 1404 (US). DURHAM CO.: shaded low woods, Duke Forest, *Blomquist*, no. 367 (US). WAKE CO.: sandy bank west of Raleigh, *Wiegand & Manning*, no. 2930. BLADEN CO.: moist sandy soil, *Biltmore Herb.*, no. 849^a. ORANGE CO.: woods near Chapel Hill, Aug. 17, 1909, *Coker* (NC), June 23, 1933, *M. T. Cameron* (NC); dry open woods, Hollow Rock, *C. C. Wilson*, no. 17 (Mo). CHATHAM CO.: dry soil, Silver City, *Biltmore Herb.*, no. 849ⁱ. FORSYTH CO.: moist woods near Mt. Carmel, *Correll*, no. 2591 (Duke). SURRY CO.: moist shaded cove, Pilot Mt., *R. M. Williams*, no. 464 (Duke). ROWAN CO.: vicinity of Salisbury, *Heller*, no. 140 (NY, Phil). POLK CO.: near Columbus, July 22, 1897, *E. C. Townsend* (US). MADISON CO.: open woods, bluff along river, Hot Springs, *Oosting*, no. 34,230 (Duke). BUNCOMBE CO.: Biltmore, *Biltmore Herb.*, no. 849^b, in part (US); Weaversville, July 8, 1933, *H. B. Teague* (Duke). SWAIN CO.: partly shaded roadside near Cherokee Lodge, rare, *R. A. McLean*, no. 73 (Duke). SOUTH CAROLINA: DARLINGTON CO.: woods at Lauther's Lake, *Budd E. Smith*, no. 1652 (NC). LEXINGTON CO.: vicinity of Batesburg, *E. A. McGregor*, no. 309 (US), as *R. hybrida*. GREENVILLE CO.: summit of Paris Mt., July, 1896, *J. K. Small* (NY). ANDERSON CO.: damp soil, Anderson, *John Davis*, no. 8394 (US, Mo, same no. with label copied and data changed to "dry ground" by B. F. Bush whose Missouri plant grows in dry ground). OCONEE CO.: thickets, *A. P. Anderson*, no. 1222 (US); Clemson College, *H. D. House*, no. 2384 (NY). GEORGIA: CLARKE CO.: roadside, Athens, *L. M. Perry*, no. 1083, as *R. humilis*. OHIO: MEIGS CO.: Letart, Sept. 10, 1935, *C. H. Jones* (NY). KENTUCKY: LOCALITY NOT DEFINITELY PLACED: "Ky river hills, mouth of Hickman Cr.", July, 1832, *C. W. Short*, as *R. strepens* (Phil), sent to Hooker who wrote in 1833: "The other *Ruellia* [var. *nanella*] with small flow^s looks diff^t—But I am much puzzled with the Genus". ROWAN CO.: prairie patch, Clark Mt., *E. L. Braun*, no. 1930 (Braun). MENIFEE CO.: oak woods, dry limestone slope, Red River valley, *E. L. Braun*, no. 2128 (Braun). BELL CO.: rocky woodland, Pineville, *Pennell*, no. 11,804 (Phil);

sandy soil, slope of Pine Mt. at Frakes, *E. L. Braun*, no. 1530 (Braun). ROCKCASTLE co.: wooded gully, south of Livingston, *Smith & Hodgdon*, no. 3785 (US). OWEN co.: about 1 mile north of Scott Co. line, *E. L. Braun*, no. 3204 (Braun); wooded slope, Severn Creek, *E. L. Braun*, no. 4578 (Braun). WAYNE co.: Beaver Creek, *E. L. Braun*, no. 3099 (Braun). JEFFERSON co.: 3 miles south of Louisville, July 5, 1892, *L. S. Bergmann* (Mo). LARUE co.: open cedar slope, limestone, Upton, *E. L. Braun*, no. 1970 (Braun). TENNESSEE: SEVIER co.: Great Smoky Park, near Gatlinburg, 1932, *Mrs. C. D. Walcott* (US). KNOX co.: Knoxville, *Ruth*, no. 101, as *R. strepens*. HAMILTON co.: old fields, Sequachie Valley, *Biltmore Herb.*, no. 849^b (US); Chickamauga Park, May 25, 1911, *J. R. Churchill* (Mo). FRANKLIN co.: dry soil, Cowan, *Biltmore Herb.*, no. 849^e (US); woods north of Shernwood, June 6, 1897, *H. Eggert* (Mo). CHEATHAM co.: limestone bluffs, Kingston Springs, *Svenson*, no. 42. MAP 16.

11e. Var. MEMBRANACEA, forma **breviberbis**, f. nov. (TAB. 867, FIG. 4-6), var. *membranaceae* simillima, caulis internodiis puberulis vel glabrescentibus rare sparseque hirsutis.—Scattered through the general range. MARYLAND: ANNE ARUNDEL co.: Bay Ridge, July 13, 1897, *F. H. Knowlton* (US). WEST VIRGINIA: CABELL co.: dry field in clay soil, near Roland Park, *Gilbert & Gilbert*, no. 259 (VPI). NORTH CAROLINA: POLK co.: wet shaded ground, Tryon, *D. C. Peattie*, no. 1351 (NC). GEORGIA: DEKALB co.: Stone Mountain, July 1-8, 1886, *Small* (TYPE in Herb. NY. Bot. Gard.). TENNESSEE: COCKE co.: near Wolf Creek, *Kearney*, no. 863 (US).

11f. Var. MEMBRANACEA, forma **hypopsila**, f. nov. (TAB. 867, FIG. 1-3), var. *membranaceae* simillima; caulis internodiis plerumque pubescentibus; foliis subtus glabris vel subglabris, vix strigosis, supra strigosis; calycis segmentis ciliatis.—Occasional in Virginia and North Carolina. VIRGINIA: ELIZABETH CITY co.: Old Point Comfort, Sept. 15, 1895, *Britton* (NY). NORFOLK co.: near Northwest, *Kearney*, no. 1565 (US). SURRY co.: border of bottomland woods along Blackwater River, about 1 mile southwest of Dendron, June 14, 1941, *Fernald & Long*, no. 13,148 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.), no. 13,491 (fruit of preceding). SOUTHAMPTON co.: dry sandy pine woods by Nottoway River, near Carey Bridge, *Fernald & Long*, no. 13,147; alluvial wooded bottomland of Nottoway River, Cypress Bridge, *Fernald & Long*, no. 8470; wooded alluvial bottomland of Meherrin River, near Haley's Bridge, *Fernald & Long*, no. 8471. SUSSEX co.: bottomland woods along Nottoway River, east of Huske, *Fernald & Long*, no. 13,761. NORTH CAROLINA: ORANGE co.: meadow below Durham-Chapel Hill Bridge, June 26, 1915, *Coker & Totten*, transition to next form (NC).



Photo. B. G. Schubert.

RUELLIA CAROLINIENSIS, var. *MEMBRANACEA*, forma *HYPOPSILA*: FIG. 1, summit, $\times 1$, of type; FIG. 2, upper, and FIG. 3, lower surface of leaf, $\times 10$

Var. *MEMBRANACEA*, forma *BREVIBERBIS*: FIG. 4, internode and leaves, $\times 1.7$; FIG. 5, upper, and FIG. 6, lower surface of leaf, $\times 10$



Photo. B. G. Schubert.

RUELLIA CAROLINIENSIS, var. *MEMBRANACEA*, forma *LAEVIOR*: FIG. 1, fruiting summit, $\times 1.7$, of TYPE; FIG. 2, upper, and FIG. 3, lower surface of leaf, $\times 10$; FIG. 4, portion of calyx-segment and capsule, $\times 10$



Photo. B. G. Schubert.

RUELLIA CAROLINIENSIS, var. *NANELLA*: FIG. 1, TYPE (2 plants), $\times 1$; FIG. 2, upper, and FIG. 3, lower surface of leaf, $\times 10$; FIG. 4, flower-bud, with folded bract and 2 calyx-segments, $\times 10$; FIG. 5, portion of calyx-segment and capsule, $\times 10$



Photo. B. G. Schubert.

RUELLIA CAROLINIENSIS, var. NANELLA: FIG. 1, internode and base of leaf, $\times 4$
 R. CAROLINIENSIS, var. NANELLA, forma ECILIATA: FIG. 2, TYPE (3 plants), $\times 1$; FIG. 3,
 portion of leaf, bracts and internodes, $\times 10$; FIG. 4, portion of calyx and capsule, $\times 10$

11g. Var. **MEMBRANACEA**, forma **laevior**, f. nov. (TAB. 868), var. *membranaceae* simillima; caulis internodiis glabrescentibus; foliis utrinque glabris glabrescentibusve; calycis laciniis eciliatis vel vix ciliatis.—Local, Virginia and North Carolina. VIRGINIA: SOUTHAMPTON CO.: wooded alluvial bottomland of Meherrin River, near Haley's Bridge, *Fernald & Long*, no. 9151. GREENSVILLE CO.: bottomland woods along Meherrin River southeast of Gaskins, Aug. 3, 1941, *Fernald & Long*, no. 13,462 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.). AMELIA CO.: July 1, 1936, *J. B. Lewis*, no. 114 (VPI). NORTH CAROLINA: ORANGE CO.: swamp of New Hope Creek, 5 miles east of Chapel Hill, June 30, 1931, *H. R. Totten* (NC); meadow 3 miles out from Chapel Hill, on Raleigh Road, 1931, *T. N. Webb* (NC).

11h. Var. **nanella**, var. nov. (TAB. 869 et 870, FIG. 1), caule filiformi ad basin 1–2 mm. diametro 1–3(–4) dm. alto, internodiis valde divergenter villosa-hirsutis; foliis membranaceis, ellipticis vel oblongis majoribus 2–6 cm. longis; calycis segmentis 1.3–2 cm. longis, ciliatis dorso plerumque glabrescentibus.—Dry to moist woods, local, eastern Maryland to Kentucky, south to South Carolina; southern Mississippi. MARYLAND: CECIL CO.: loamy, wooded slope, Duffy Creek, 2 miles southeast of Cecilton, *B. Long*, no. 48,422 (Phil.); North East, Sept. 2, 1894, *Joseph Crawford* (Phil), transition to var. *membranacea*. KENT CO.: Chestertown, July 29, 1901, *E. G. Vanatta* (Phil), transition to var. *membranacea*. CHARLES CO.: dense woods, Tompkinsville, *Leonard & Killip*, no. 838 (US). VIRGINIA: NANSEMOND CO.: near Suffolk, *Kearney*, no. 1718 (US); dry sandy woods above Nansemond River, east of Cahoon Pond, northwest of Suffolk July 23, 1941, *Fernald & Long*, no. 13,461 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.). PRINCESS ANNE CO.: Oceana, July 2, 1923, *H. B. Meredith*, in part (Phil), transition to var. *membranacea*; dry, mixed woods, Little Neck, *Fernald & Long*, no. 4195, transition to var. *membranacea*. NORTH CAROLINA: HALIFAX CO.: Weldon, July, 1875, *Mac Elwee* (Phil). MCDOWELL CO.: Old Fort, June, 1872, *Walter Faxon*. ORANGE CO.: Chapel Hill, July, 1931, *Vena Millsaps* (NC). SOUTH CAROLINA: DARLINGTON CO.: damp shady woods near Auburn, June 27, 1909, *Coker* (NC). KENTUCKY: poor dry hill on the Kentucky River, 1832, *C. W. Short* (Phil), this material referred to Hooker (see note under Kentucky specimens of var. *membranacea*), with the following note: "Is this plant specifically distinct from *R. strepens* in another part of the Collection? Found on a poor dry hill on the Ky river. It flowers later than the former & is much more starved in its growth." MISSISSIPPI: JACKSON CO.: Ocean Springs, *A. B. Seymour*, no. 91 8 22, as *R. ciliosa*. HARRISON CO.: Biloxi, *Lloyd & Tracy*, no. 347, in part (NY). MAP. 17.

11i. Var. **NANELIA**, forma **eciliata**, f. nov. (TAB. 870, FIG. 2–4),

var. *nanellae* simillima, internodiis glabrescentibus vel puberulentibus; foliis vix vel minutissime strigosis; calycis laciniis ciliatis.—Local, southeastern VIRGINIA: SOUTHAMPTON CO.: dry sand of open alluvial flat by Blackwater River, southeast of Unity, July 4, 1942, *Fernald & Long*, no. 14,412 (TYPE in Herb. Gray.; ISOTYPE in Herb. Phil. Acad.); white sand of pine and oak woods at Round Gut, southwest of Franklin, *Fernald & Long*, no. 13,154. SUSSEX CO.: bushy clearing southeast of Stony Creek, *Fernald & Long*, no. 13,145, taller plants, transitional to var. *membranacea*, forma *laevior*. MISSISSIPPI: SIMPSON CO.: Magel, *E. G. Holt*, no. 5 (US), as *R. humilis*.

11j. Var. **cheloniformis**, var. nov. (TAB. 871 et 872), caule stricto vix vel sparse ramoso 4.5–9 dm. alto basin versus 2–5 mm. diametro plus minusve hirsuto; foliis subcoriaceis firmis duris lanceolatis vel lanceolato-ovatis subacuminatis, majoribus (supernis) 6–12 cm. longis 2–4.5 cm. latis, subtus ad venas strigosis vel hispidis supra strigosis; nodis floriferis 1–4 approximatis vel imis 3–15 cm. distantibus; glomerulis congestis; calycis laciniis dorso glabris vel sparse hirsutis ciliatis; corollis 3–4.5 cm. longis.—Woods and clearings, north-central South Carolina and northern Georgia, north to southern New Jersey, northern Maryland and northern Virginia, more rarely to Kentucky and southern Indiana. NEW JERSEY: CAPE MAY CO.: margins of fresh meadows east of Cape May Court House, *Long*, no. 6685 (Phil), appr. var. *membranacea*; Cape May Court House, 1886, *Isaac Burk* (Pa, Phil); woods, Cold Spring, July 18, 1908, *Van Pelt* (Phil). DELAWARE: SUSSEX CO.: Rehoboth, July 8, 1908, *Van Pelt* (Phil). MARYLAND: CECIL CO.: North East, July 20, 1890, *J. B. Brinton* (Pa), as *R. strepens*; Elk Neck, June 24, 1923, *W. L. Abbott* (Phil); moist soil below Cromley's Mount, *Pennell*, no. 1591 (Pa). MONTGOMERY CO.: Little Falls Brook, *Pennell*, no. 2439 (Phil). ST. MARYS CO.: Point Lookout, July 13, 1930, *O. M. Freeman* (USNA). DISTRICT OF COLUMBIA: Brookland, July 17, 1897, *Carrie Harrison* (USNA). VIRGINIA: CLARKE CO.: woods, *Boyce, Hunnewell*, no. 10,742 (FWH). NORTHAMPTON CO.: dry woods, Savage Neck, July 19, 1936, *R. R. Tatnall*, no. 3013 (TYPE in Herb. Gray.). GLOUCESTER CO.: Beaver Swamp Creek, north of Gloucester, July 5, 1924, *H. B. Meredith* (Phil), as *R. parviflora*. ELIZABETH CITY CO.: Hampton, July 22, 1927, *J. R. Churchill*, (Mo), as *R. strepens*. JAMES CITY CO.: open places in moist hardwood ravine, southwest of Williamsburg, *Grimes*, no. 4609 (NY); Jamestown, June 24, 1924, *H. B. Meredith* (Duke). PRINCESS ANNE CO.: Virginia Beach, July 3, 1892, *Britton, Britton & Vail* (NY); pine woods, Virginia Beach, *Fernald & Long*, no. 4191; sandy woods, Knott's Island, *Fernald & Long*, no. 4194, in part. NORFOLK CO.: Portsmouth, June, 1840, *Rugel* (NY). DINWIDDIE CO.: low open pineland, thickets

and clearings just east of McKenney, *Fernald & Long*, no. 14,413. MECKLENBURG CO.: roadside-thicket, 6 miles north of Clarks-ville, *F. R. Fosberg*, no. 15,463. HALIFAX CO.: old clearing, east of Dan River, *Fosberg*, no. 15,384. NORTH CAROLINA: CAMDEN CO.: low, moist bushy soil, near Shiloh, *Correll*, no. 2068 (Duke). WASHINGTON CO.: moist soil near Scuppermong, *Correll*, no. 1918 (Duke). GREENE CO.: pine woodland, Farmville, *Godfrey*, no. 4278 (Duke, US), transition to var. *membranacea*. WAKE CO.: pine woodland along Crabtree Creek, 8 miles northwest of Raleigh, *Godfrey*, no. 4991, in part. HARNETT CO.: Buie's Creek, June 29, 1938, *Frances & Sarah Fount* (NC). ROWAN CO.: Salisbury, June, 1872, *LeRoy & Ruger*, in part (NY). FORSYTH CO.: woods, June 20, 1940, *Schallert*. ALEXANDER CO.: on bank, road from Gelreath P. O. to Hidnite, *Radford & Stewart*, no. 1600 (NC). MC DOWELL CO.: Old Fort, *Biltmore Herb.*, no. 849ⁱ (US). BUNCOMBE CO.: Biltmore, *Biltmore Herb.* no. 849^b, in part, mixed with var. *membranacea* (US). POLK CO.: Tryon, July 22, 1897, *E. C. Townsend*, in part (US). SOUTH CAROLINA: FLORENCE CO.: sandy, shady banks of Pee Dee River, near Mars Bluff Bridge, *Wiegand & Manning*, no. 2931, as *R. parviflora*. CHARLESTON CO.: near Charleston, 1856, *L. R. Gibbes* (NY), as *R. parviflora*. OCONEE CO.: Clemson College, *H. D. House*, no. 2384 (US), as *R. parviflora*. GEORGIA: WITHOUT STATED LOCALITY: *Boykin* (NY), as *Dipteracanthus hybridus*; *Porter*, 1846 (Phil) "mid. Georgia, 1846," *Porter*, with the comment: "There is a good deal of confusion among the Ruellias". CLARKE CO.: Athens, June 28, 1930, *J. H. Pyron* (Duke). GWINNETT CO.: Yellow River, near McGuire's Mill, July 2, 1895, *Small* (NY), as *R. ciliosa*, changed by Small to *R. parviflora*; Thompson's Mills, *Allard*, no. 225 (NY, US). FLOYD CO.: Rome, July, 1888, *Gerald McCarthy* (US). INDIANA: JEFFERSON CO.: Hanover, July, 1875, *A. H. Young* (NY). CRAWFORD CO.: roadside near Leavenworth, *Deam*, no. 16,473 (NY), as *R. strepens*. KENTUCKY: ROCKCASTLE CO.: wooded gully south of Livingston, *Smith & Hodgdon*, no. 3758 (G), as *R. strepens*. MAP 18.

11k. Var. **salicina**, var. nov. (TAB. 873), caule simplicie vel sparse breviterque ramosi tenui 1.5–7 dm. alto canescenti-puberulo vel subvillosa; nodorum superiorum foliis longioribus anguste lanceolatis vel lanceolato-linearibus 0.5–1.5(–2) cm. latis subtus glabrescentibus vel sparse strigosis; calycis segmentis dorso canescenti-pilosus vel glabrescentibus ciliatis; corollis 2–3 cm. longis, fauce supra 5–10 mm. diametro.—Northern Florida to eastern Texas, north, locally, to northern Georgia, Tennessee and southern Indiana. GEORGIA: GWINNETT CO.: Thompson's Mills, *Allard*, no. 224 (US), as *R. parviflora*. FLOYD CO.: deciduous woodland, Horseleg Mt., *Pennell*, no. 4099 (Pa). FLORIDA: GADSDEN CO.: open dry woods of pine and oak, River Junction,

Wiegand & Manning, no. 2933. LAKE CO.: dense, moist woodland, Hawkinsville, May 7, 1910, S. C. Hood (Mo). INDIANA: CLARK CO.: wet grassy and rocky shore, southwest of Charleston, F. J. Hermann, no. 6730. TENNESSEE: DAVIDSON CO.: copses, vicinity of Nashville, Sept., 1885, Gattinger. SHELBY CO.: Normal, C. E. Moore, no. 69 (US). ALABAMA: BLOUNT CO.: Blount Springs, May 5, 1898, C. F. Baker (NY), as *R. pedunculata*. MONROE CO.: Perdue Hill, July 22, 1885, C. Mohr (US), as *R. ciliosa*, var. *hybrida*, this altered to var. *ambigua*, then the sheet, in spite of petioles 1.5 cm. long, annotated as the sessile-leaved *R. humilis*! MOBILE CO.: pine barrens and dry pastures, Spring Hill, E. W. Ganes, no. 948, in part (US)—the sheet also containing var. *semicalva* and *R. ciliosa*. MISSISSIPPI: CLARKE CO.: Enterprise, S. M. Tracy, no. 3288 (NY), as *R. ciliosa*, altered to *R. parviflora*. LOUISIANA: WITHOUT STATED LOCALITY: *Steinhaur*. ORLEANS PARISH: New Orleans, Drummond, no. 257, as *Dipteracanthus strepens*, another, with no., as *Calophanes humistrata*. NATCHITOCHES PARISH: open ground, Natchitoches, June 10, 1915, E. J. Palmer, no. 7945 (TYPE in Herb. N. Y. Bot. Gard.; ISOTYPES in Herb. Mo. Bot. Gard. and U. S. Nat. Herb.) RAPIDES PARISH: pine-barren hills, vicinity of Alexandria, C. R. Ball, nos. 559 (US), as *R. strepens*, and 655, in part (Mo)—the latter mixed on a sheet with *R. humilis* var. *frondosa* and quite like the other sheets of no. 559 (presumably the former mixed in handling). IBERIA PARISH: moist open grassy woods, Avery Island, D. S. & H. B. Correll, no. 9525. TEXAS: UPSHUR CO.: sandy woods, Big Sandy, Reverchon, no. 2536 (Mo); damp sandy soil, Big Sandy, Reverchon, no. 1402 (simulating small var. *dentata*). GREGG CO.: rich sandy woods, Gladwater, June 18,, Reverchon (Mo). WOOD CO.: damp woods, Mineola, Reverchon, no. 2113 (Mo). HARRIS CO.: White Oak Bayou, 4 miles west of Houston, Lindheimer, no. 40 (data and no., Mo.; two sheets without no., G), as *R. strepens*. MAP 19.

111. Var. **dentata** (Nees), comb. nov. Stem stiff and relatively strong, simple or more often with ascending branches, the main axis 1.5–9 dm. long, hirsute to puberulent; the lower and median internodes elongate; 4–9 nodes bearing glomerules; leaves oblong, oblong-lanceolate, ovate or elliptic, subcoriaceous, often undulate-dentate, blunt or acutish, the lower and middle ones subequal, the upper reduced and definitely smaller; flowers occasionally cleistogamous; calyx-segments ciliate, 1.8–2.5 cm. long.—*Dipteracanthus ciliosus*, β . *dentatus* Nees in DC. Prodr. xi. 123 (1847).—Chiefly in dry woods and clearings, upland of South Carolina, western North Carolina and eastern Tennessee, north to Delaware, southeastern Pennsylvania, Maryland, northern Virginia, West Virginia, Kentucky and southeastern Indiana. PENNSYLVANIA: YORK CO.: below McCall's Ferry,



Photo. B. G. Schubert.

RUELLIA CAROLINIENSIS, var. CHELONIFORMIS: FIG. 1, TYPE, $\times 5/12$; FIG. 2, corolla, $\times 1$; FIG. 3, calyx and capsule, $\times 2$; FIG. 4, bract, calyx-segment and portion of capsule, $\times 10$



Photo. B. G. Schubert.

RUELLIA CAROLINIENSIS, var. CHELONIFORMIS: FIGS. 1 and 2, flowering summits, $\times 1$;
FIG. 3, upper and FIG. 4, lower surface of leaf

July 11, 1895, *Crawford* (Phil). DELAWARE: NEW CASTLE CO.: north end of cedar scrub, near Taylor's Bridge, July 28, 1891, *A. Commons*. SUSSEX CO.: oak copse, Rehoboth, Sept. 5, 1908, *J. R. Churchill*. MARYLAND: CECIL CO.: Conowingo, July 25, 1907, *J. J. Carter* (Phil). BALTIMORE CO.: near Baltimore, 1866, *P. V. LeRoy* (NY). CALVERT CO.: dry woods, Chesapeake Beach, *Hunnewell*, no. 5666 (FWH). WICOMICO CO.: Salisbury, July 14, 1904, *J. J. Carter* (Phil). DISTRICT OF COLUMBIA: June 22, 1902, *Steele* (Duke). WEST VIRGINIA: NICHOLAS CO.: dry bank, Peter Creek, *Millspaugh*, no. 596 (NY), as *R. ciliosa*. VIRGINIA: FAIRFAX CO.: woods, Great Falls, *Hunnewell*, no. 7027 (FWH). JAMES CITY CO.: dry slope about 3 miles north of Williamsburg, *R. W. Menzel*, no. 30, as *R. strepens*. HENRICO CO.: Fairway Ridge, near Richmond, July 10, 1928, *F. H. W.* PRINCESS ANNE CO.: pine woods, Virginia Beach, Sept. 25 and 28, 1900, *Wm. Palmer* (US); Oceana, July 2, 1923, *H. B. Meredith*, in part (Phil); open clay at border of woods, east of Little Creek, *Fernald & Long*, no. 4192. NORFOLK CO.: dry sandy roadside, Ocean View, July 3, 1923, *H. B. Meredith* (Phil). NANSEMOND CO.: moist clearing, site of extinct Marsh's Millpond, *Fernald & Long*, no. 14,414. ISLE OF WIGHT CO.: sandy, recently cleared woods along Blackwater River, below Broadwater Bridge, north of Zuni, *Fernald & Long*, no. 13,460. SUSSEX CO.: dry sandy woods, thickets and clearings, north of Moore's Mill, *Fernald & Long*, no. 6397; dry woods near Nottoway River, Green Church Bridge, northwest of Owen's Store, *Fernald & Long*, no. 14,020. HALIFAX CO.: old clearing, east of Dan River, 12 miles east of Danville, *F. R. Fosberg*, no. 15,384 (Pa). ORANGE CO.: field, Orange, *Killip*, no. 13,248 (US). NORTH CAROLINA: ORANGE CO.: Arboretum and Campus of Univ. N. C., July 1, 1914, *Coker* (NC). POLK CO.: banks and meadows, "Valhalla", Tryon, *D. C. Peattie*, no. 626 (NC). MADISON CO.: Warm Spring, Aug. 23, 1875, *J. H. Redfield* (Mo). BUNCOMBE CO.: Asheville, *B. L. Robinson*, no. 59, as *R. strepens*; Biltmore, *Biltmore Herb.* no. 849 (US). ROWAN CO.: vicinity of Heilig's Mill, *Small & Heller*, no. 139 (Phil, US). JACKSON CO.: near Dillsboro, Sept. 9, 1933, *Alexander, Everett & Pearson* (NY). SOUTH CAROLINA: DARLINGTON CO.: east side of Lynches River near Clyde, *B. E. Smith*, no. 1653 (NC). ANDERSON CO.: dry ground, Anderson, *John Davis*, no. 8369 (Mo). INDIANA: FLOYD CO.: wooded hillside and along railroad, west of New Albany, *Deam*, no. 14,010. KENTUCKY: ROCKCASTLE CO.: near Conway, *E. L. Braun*, no. 3132 (Braun). PULASKI CO.: thin soil over limestone, south of Burnside, *Wherry & Pennell*, no. 13,786 (Phil). EDMONSON CO.: near Sweeden, *E. L. Braun*, no. 3593 (Braun). WARREN CO.: Bowling Green, July 3, 1889, *Sadie F. Price*, painting (Mo). BALLARD CO.: woods, Wickliffe, *McFarland & Anderson*, no. 293

(Mo). TENNESSEE: BLOUNT CO.: damp woods 2 miles east of Townsend, W. M. Benner, no. 5803 (Phil). PLATES 874 and 875; MAP 20.

Of all the species of *Ruellia* in the eastern United States *R. caroliniensis* is the most baffling, for in different areas it is reasonably definable as geographic varieties, but, at least in eastern Virginia, plants with strongly spreading-hirsute stems and others with the internodes merely puberulent or short-pilose will occur side-by-side, while in other colonies may be found individuals with the leaves strongly hispid on the veins beneath almost mingled with individuals with the lower leaf-surfaces glabrous. In general the more northern series (vars. *membranacea*, *nanella*, *cheloniformis* and *dentata*) have the soft villosity or pilosity of stem or leaves less marked than in the more southern vars. *typica*, *semicalva* and *salicina*. In the three latter, furthermore, the leaf-blade is rather "full", so that the pressed foliage commonly puckers or has a "tuck" and the calyx-segments are commonly canescent on the back. In the more northern varieties, on the contrary, the leaf-blade is readily flattened in pressing and the calyx-segments are glabrous or only exceptionally pubescent on the back. When well developed the stems of the southern vars. *typica* and *semicalva* tend to divergent branching, with the elongate branches floriferous at tip, but simple-stemmed plants somewhat obscure this character. In the northern series the branching, except sometimes (as in var. *dentata*) from the base, is weak, most plants having simple stems or few short and rarely floriferous branches.

The commoner northern plants fall into the thin-leaved var. *membranacea* (with several minor forms based upon development or lack of development of trichomes on the leaves or of cilia on the calyx-segments), which passes insensibly, on the one hand, into the stouter, stiffer and firmer-leaved var. *cheloniformis*, on the other into the dwarf, very slender and small-leaved var. *nanella*, the latter, or something very like it, reappearing in southern Mississippi, where it passes into weak unbranched states of the southern var. *semicalva*. In the extreme South, furthermore, the narrow-leaved var. *salicina*, very definite in its extreme development, merges into var. *semicalva* and strongly suggests the narrowest-leaved extreme of the usually more

northern var. *cheloniformis*. Var. *dentata*, with great reduction of leaves above, with the lower and median leaves nearly uniform, with strong tendency to develop elongate and floriferous basal branches, and its great abundance of glomerules, is as definite as any of the varieties, but some specimens show evident transition to vars. *salicina*, *semicalva*, *cheloniformis* and *membranacea*. In short, the species, like the usually more western *R. humilis*, is evidently in a state of flux and I am unable to find in it really stable characters.

The identifications of the past clearly show how perplexing have been the many variations of this most complex species, especially to those without any field-experience with it. It has been variously known or identified as *R. strepens* L. (our species 2, PLATES 841 and 842), or *R. pedunculata* Torr. (our species 3, PLATE 843), mixed in collections with *R. Purshiana* (our species 5, PLATES 845 and 846), identified as *R. ciliosa* Pursh (our species 7, PLATES 849 and 850) or as *R. humilis* Nutt. (our species 10, PLATES 854-860).

It was described and illustrated by Dillenius (our PLATE 863) and his description and plate were included in the *R. strepens* of Linnaeus (1753), but later excluded by him. In fact, Elliott, apparently not cognizant of the redefinition of *R. strepens* by Linnaeus (1771), was puzzled by the restriction of the latter name by authors who had *Mantissa Altera*. Describing in detail *Ruellia caroliniensis*, var. *typica*, as *R. strepens*, "the whole plant hairy . . . Calyx [-segments] . . . linear-lanceolate, the upper half almost setaceous, very hispid", and correctly citing for his South Carolina plant the Dillenian plate and *Anonymos caroliniensis* Walter, 168, Elliott thus expressed his perplexity: "I know not how Pursh could have called [correctly following the emended description of Linnaeus in 1771] the segments of the calyx lanceolate, they are very accurately represented by Dill. Hort. Elth. T. 249, F. 321, excepting that in number 5 and 6 the setaceous points are not sufficiently extended, but in number 1 from which he derived the epithet *Comosa*, the representation is very accurate."

Although the Walter type of his *Anonymos caroliniensis*, p. 168, basis of *Ruellia caroliniensis*, is lost, his generic description was good and his specific description well applies to the southern

plant, which occurs abundantly in eastern South Carolina and about Savannah (see MAP 14). Since the other strongly pubescent ("hirsute") varieties (vars. *membranacea*, *cheloniformis* and *dentata*) barely reach the northern half of South Carolina from the north (see MAPS 16, 18 and 20) we are quite safe in identifying as Walter's plant the variety which abounds in the region he best knew. *R. caroliniensis* (var. *typica*) was next described by Pursh as *R. hybrida* (1814), evidently from the strongly branching state: "*R. erecta*, *ramosissima*, *pilis albidis hirsuta*; *foliis* . . . *dense hirsutis*, . . . *calycis laciniis linearibus tubo corollae vix brevioribus*. In sandy fields near Savannah, Georgia", where our plant abounds. If it were not for the earlier name of Walter the correct name of this species would be *R. hybrida* Pursh, the name used for the canescent-villous extreme by Small and others. Nees, who sadly mixed the identities of our American species and varieties, again beautifully described typical *R. caroliniensis* as *Dipteracanthus Mitchillianus* (1847), emphasizing the stem "*pube albâ densê incano pilisque patulis hirsutis*", the oval-oblong to oblong and obtusish leaves decurrent into petioles, the blades "*utrinque laxè hirsutis*", the linear-setaceous calyx-segments "*albo-hirsutissimis*" and about half as long as the corolla-tube. That was a first-rate description. Unfortunately, in the same treatment Nees published the ill-described *D. ciliolus*, "*γ. parviflorus*, *corollâ vix pollicari*, *foliis paullo longiori petiolo* (3-6-pollicari)", from Kentucky. As already sufficiently emphasized, a plant with petioles 3-6 inches long is quite impossible in *Ruellia* (at least in ours). Nevertheless, the impossible description by Nees has been made the basis for a specific combination, *R. parviflora* (Nees) Britton, and for the varietal combination, *R. caroliniensis*, var. *parviflora* (Nees) Blake; and in recent years these ill-founded names have largely appeared on the labels of most of the varieties and forms of *R. caroliniensis*.

The confusion in the use of names is here perhaps somewhat cleared. The presentation of the varieties and forms may later need revision. After some years of puzzling over the misbehavior of these inconstant trends, I have done the best I can with them. Future and wiser students may work out a better treatment.

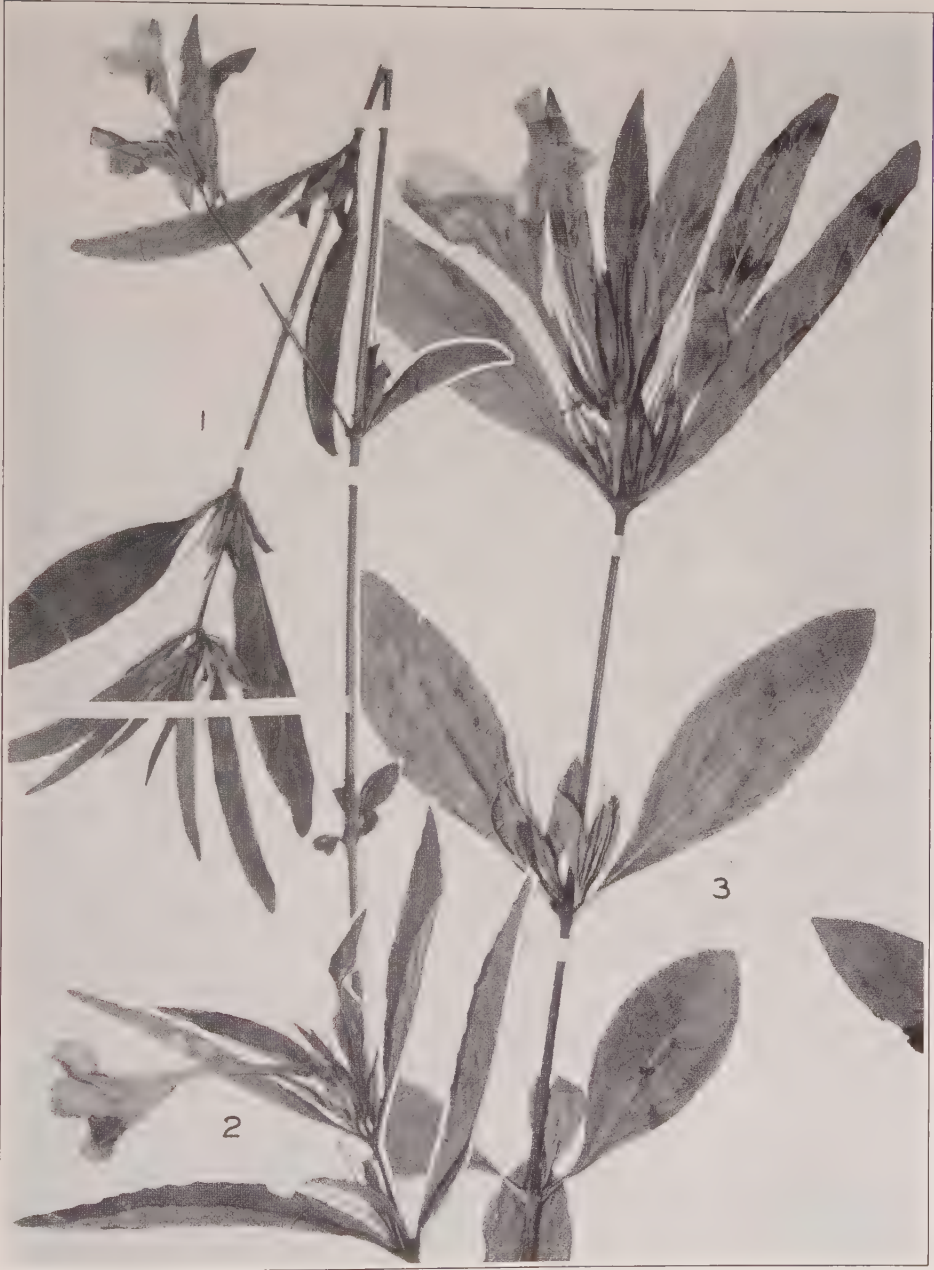


Photo. B. G. Schubert.

RUELLIA CAROLINIENSIS, var. SALICINA: FIG. 1, TYPE, $\times 4/7$; FIGS. 2 and 3, summits of plants, $\times 1$



Photo. B. G. Schubert.

RUELLIA CAROLINIENSIS, var. DENTATA: FIG. 1, small plant, $\times \frac{2}{5}$; FIG. 2, portion of branch, $\times 1$; FIG. 3, portion of fruiting branch, $\times \frac{1}{2}$, to show characteristic branching

EXPLANATION OF PLATES

PLATE 839. *RUELLIA BRITTONIANA* Leonard: FIG. 1, summit of plant, $\times 1$, from Houma, Louisiana, *Wurzlouw*; FIG. 2, summit of peduncle and calyx, $\times 4$, from *Wurzlouw*; FIG. 3, corolla, $\times 1$, from *Wurzlouw*; FIG. 4, calyx and capsule, $\times 2$, from *Wurzlouw*.

PLATE 840. *R. TWEEDIANA* Griseb.: FIGS. 1 and 2, portions of branching plant, $\times 1$, from Colonia Benitez, Chaco, Argentina, *A. G. Schulz*, no. 778; FIG. 3, summit of peduncle and base of calyx, $\times 4$, from no. 778; FIG. 4, tip of calyx-segment, $\times 10$, from no. 778; FIG. 5, corolla, $\times 1$, from no. 778.

PLATE 841. *R. STREPENS* L.: FIG. 1, flowering median node, $\times 1$, from near Chattanooga, Tennessee, May 27, 1911, *J. R. Churchill*; FIG. 2, corolla, with one basal bract removed, $\times 1$, from near State Lake, Union Co., Kentucky, *Shacklette*, no. 345; FIG. 3, flower, showing broad calyx-segment, $\times 1$, from no. 345; FIG. 4, long-peduncled fruit, $\times 1$, from Powell's Creek, Garysville, Virginia, *Fernald & Long*, no. 8472.

PLATE 842. *R. STREPENS*, forma *CLEISTANTHA* (Gray) S. McCoy: FIG. 1, summit of characteristic plant, $\times \frac{2}{5}$, from South Lebanon, Ohio, *E. B. Harger*, no. 8010; FIG. 2, a terminal glomerule, $\times 1$, from Mammoth Cave, Kentucky, *E. L. Braun*, no. 3611; FIG. 3, node with large cleistogamous flower, $\times 1$, from Deerfield, Vernon Co., Missouri, *Palmer & Steyermark*, no. 42,140; FIG. 4, terminal glomerule with 2 (upper) small cleistogamous flowers, $\times 2$, from Joplin, Missouri, *E. J. Palmer*, no. 1310; FIG. 5, subterminal fruiting node, $\times 2$, from McDonald Co., Missouri, *E. J. Palmer*, no. 4069; FIG. 6, calyx and open capsule, $\times 2$, from St. Louis, Missouri, August 19, 1905, *A. G. Johnson*.

PLATE 843. *R. PEDUNCULATA* Torr.: FIG. 1, small flowering plant, $\times 4/9$, from Natchitoches, Louisiana, *E. J. Palmer*, no. 7511; FIG. 2, base of more branching fruiting plant, $\times \frac{1}{2}$, from Monteer, Missouri, *Bush*, no. 6401A; FIG. 3, portion of branching inflorescence, $\times 1$, from near Arcadia, Missouri, *Greenman*, no. 3764; FIG. 4, calyx and capsule, $\times 2$, from Baker Springs, Howard Co., Arkansas, October 5, 1909, *J. H. Kellogg*; FIG. 5, calyx-segments and base of capsule, $\times 10$, from last specimen; FIG. 6, strigose surface of capsule, $\times 10$, from same specimen.

PLATE 844. *R. PINETORUM* Fernald: FIG. 1, flowering and fruiting branches, $\times 1$, from TYPE; FIG. 2, portion of fruiting branch, $\times 1$, from TYPE; FIG. 3, portion of leafy base, $\times 1$, from Lake Charles, Louisiana, *Andrew Allison*, no. 261; FIG. 4, calyx and capsule, $\times 2$, from TYPE; FIG. 5, surface of peduncle, $\times 10$, from TYPE; FIG. 6, bases of calyx-segment and capsule, $\times 10$, from TYPE.

PLATE 845. *R. PURSHIANA* Fernald: FIG. 1, portions of TYPE, $\times \frac{2}{5}$; FIG. 2, third node from base, with solitary flower, $\times 1$, from Cedar Creek, Frederick Co., Virginia, *Hunnewell*, no. 11,135; FIG. 3, second node from base, with solitary flower, $\times 1$, from Natural Bridge, Virginia, May 28, 1909, *E. B. Bartram*; FIG. 4, calyx and capsule, $\times 2$, from Dixie Caverns, Roanoke Co., Virginia, *C. E. Wood, Jr.*, no. 3673; FIG. 5, surface of stem, $\times 4$, from *Wood*, no. 3673.

PLATE 846, FIGS. 1 and 2. *R. PURSHIANA*, forma *CLAUSTROFLORA* Fernald: FIG. 1, summit of TYPE, $\times 1$; FIG. 2, uppermost node, with a tiny cleistogamous flower (upper right) and a capsule, $\times 2$, from Natural Bridge, Virginia, September 4, 1885, *N. L. & E. G. Britton*. FIG. 3, *R. PURSHIANA*: summit of capsule, showing pilose surface, $\times 10$, from *Wood*, no. 3173.

PLATE 847 and 848. *R. HETEROMORPHA* Fernald. PLATE 847, VERNAL STAGE: FIG. 1, flowering stem, $\times 1$, from near Camp Longview, Florida, *Small & Wilson*, no. 1700; FIGS. 2 and 3, flowering tips, $\times 1$, from southeast of Fort Myers, Florida, *Jeanette P. Standley*, no. 444; FIG. 4, summit of internode and base of leaf, $\times 4$, from between Cutler and Longview Camp, Florida, *Small & Carter*, no. 1097; FIG. 5, base of calyx, $\times 10$, from Big Pine Key, Monroe Co., Florida, *Small*, no. 8142. PLATE 848, LATER CLEISTOGAMOUS STAGE: FIG. 1, portion of a long fruiting branch, $\times 1$, from between Peter's Prairie and Homestead, Florida, *Small & Carter*, no. 2701; FIGS. 2 and 3,

branchlets from more open fruiting branch, $\times \frac{1}{2}$, from between Coconut Grove and Cutler, Florida, *Small & Carter*, no. 1273; FIG. 4, tip of branchlet with two cleistogamous flowers, $\times 1$, from Ross-Costello Hummock, Dade Co., Florida, *Small, Mosier & Small*, no. 6552; FIG. 5, calyces and capsules, $\times 2$, from no. 1273.

PLATES 849 and 850. *R. CILIOSA* Pursh: PLATE 849, FIG. 1, plant, $\times 1$, from Cape Savannah, Sumter Co., South Carolina, *Witmer Stone*, no. 426; FIGS. 2 and 3, plants, $\times 1$, from Poulan, Worth County, Georgia, *Pollard & Maron*, no. 574; FIG. 4, summit of internode and base of cauline leaf, $\times 4$, from River Junction, Gadsden Co., Florida, *Wiegand & Manning*, no. 2927; FIG. 5, calyx and capsule, $\times 2$, from no. 2927. PLATE 850, FIG. 1, plant, $\times 1$, from Florida, May, *A. H. Curtiss*; FIG. 2, basal branch, $\times \frac{3}{5}$, from Clarcona, Orange Co., Florida, *A. J. Pieters*, no. 120; FIG. 3, basal branch, $\times 1$, from Duval Co., Florida, *A. H. Curtiss*, no. 1944*.

PLATE 851. *R. SUCCULENTA* Small: FIG. 1, flowering plant, $\times \frac{2}{3}$, from Everglades west of Perrine, Florida, *Small*, no. 7880; FIG. 2, fruiting branch, $\times 1$, from between Coconut Grove and Cutler, Florida, October 31–November 4, 1903, *Small & Carter*; FIG. 3, summit of internode and bases of leaves, $\times 4$, from same collection as fig. 2; FIG. 4, lower surface of leaf, showing cystoliths, $\times 10$, from Bay Biscayne, Florida, *A. H. Curtiss*, no. 5500E; FIGS. 5 and 6, median and terminal flowering nodes, $\times 1$, from same specimen, as fig. 1; FIG. 7, calyx and fruit, $\times 2$, from east of Florida City, Dade Co., Florida, *Small*, no. 8080.

PLATES 852 and 853. *R. NOCTIFLORA* (Nees) Gray: PLATE 852, FIG. 1, base of plant, $\times 1$, from southeast of Ludowici, Georgia, *Wiegand & Manning*, no. 2928; FIG. 2, flowering tip, $\times 1$, from no. 2928; FIG. 3, summit, $\times 1$, of ISOTYPE, from inter St. Marks et Port Leon, Florida, *Rugel*; FIG. 4, flowering tip, $\times 1$, from Apalachicola, Florida, 1867, *Chapman*; FIG. 5, summit of internode and bases of leaves, $\times 4$, from Apalachicola, *Chapman*; FIG. 6, calyx and capsule, $\times 2$, from Biloxi, Mississippi, *S. M. Tracy*, no. 6500. PLATE 853, FIG. 1, summit of flowering stem to show long calyx-segments, $\times 1$, from near Sunbury, Liberty Co., Georgia, *LeConte* (probable type or isotype of *R. tubiflora* LeConte); FIG. 2, fruiting summit, $\times 1.8$, from Port St. Joe to Apalachicola, Florida, *Small, Small and De Winkler*, no. 11,417; FIG. 3, bract, calyx-segment and base of capsule, $\times 10$, from *Tracy*, no. 6500; FIG. 4, surface of capsule, $\times 10$, from no. 6500.

PLATES 854 and 855. *R. HUMILIS* Nutt., var. *TYPICA*: PLATE 854, FIG. 1, TYPE or ISOTYPE, $\times 1$; FIG. 2, summit of primary axis, $\times 1$, from Mercersburg, Pennsylvania, 1846, *Ruel*; FIG. 3, calyces and capsules, $\times 2$, from Butler Co., Missouri, *Bush*, no. 3739. PLATE 855, FIG. 1, median nodes of primary axis, $\times 1$, from west of Hannibal, Missouri, *John Davis*, no. 4646; FIG. 2, summit of internode and bases of leaves, $\times 4$, from Cooper County, Missouri, *Bush*, no. 15,137; FIG. 3, portion of fruiting branch, showing diffuse habit, $\times 1$, from vicinity of Nashville, Tennessee, September, 1885, *Gattinger*.

PLATE 856. *R. HUMILIS*, forma *GRISEA* Fernald: FIG. 1, portion of TYPE, showing characteristic habit of the species, $\times 1$; FIG. 2, internode and bases of leaves, $\times 4$, from TYPE.

PLATE 857. *R. HUMILIS*, var. *FRONDOSA* Fernald: FIG. 1, TYPE, $\times \frac{1}{2}$; FIG. 2, summit of internode and bases of leaves, $\times 4$, from Cleveland, Ohio, 1895, *Starr*; FIG. 3, flowering node, $\times 1$, from Milford, Ohio, June 17, 1916, *E. L. Braun*; FIG. 4, flowering node, $\times 1$, from Chambersburg, Pennsylvania, August 27, 1897, *T. C. Porter*; FIG. 5, flowering node, $\times 1$, from Corydon, Indiana, *Friesner*, no. 14,369; FIG. 6, fruiting node, $\times 1$, from Clinton, Iowa, *Pammel*, no. 77; FIG. 7, calyx and capsule, $\times 2$, from Champaign, Illinois, *A. S. Pease*, no. 12,420.

PLATE 858. *R. HUMILIS*, var. *LONGIFLORA* (Gray) Fernald: FIG. 1, two flowering branches, $\times 1$, from Piasa, Illinois, 1905, *G. E. McClure*; FIG. 2, summit of flowering branch, $\times 1$, from Wichita, Kansas, 1892, *H. R. Pease*; FIG. 3, flowering summit, $\times 1$, from Huntsville, Texas, *R. A. Dixon*, no. 377;



Photo. B. G. Schubert.

RUELLIA CAROLINIENSIS, var. DENTATA; FIGS. 1 and 2, flowering summits, $\times 1$

FIG. 4, summit of internode and bases of leaves, $\times 4$, from Willis, Texas, *L. R. Warner*; FIG. 5, bracts, calyces and fruits, $\times 2$, from north of Seagoville, Texas, *Lundell*, no. 11,679.

PLATE 859. *R. HUMILIS*, var. *EXPANSA* Fernald: FIG. 1, flowering node, from TYPE, $\times 1$; FIG. 2, median fruiting node of primary axis, $\times 1$, from Oquawka, Illinois, *Patterson*; FIG. 3, internode and leaf-base, $\times 4$, from McDonald Co., Missouri, *Bush*, no. 282; FIG. 4, calyx and capsule, $\times 2$, from Hendrix, Illinois, August, 1904, *B. L. Robinson*.

PLATE 860. *R. HUMILIS*, var. *CALVESCENS* Fernald: FIG. 1, portion of ISO-TYPE, $\times 1$; FIG. 2, flowering tip, $\times 1$, from near Burnside, Kentucky, *Biltmore Herb.*, no. 489^k; FIG. 3, internode and leaf-bases, $\times 4$, from near Manchester, Tennessee, *Biltmore Herb.*, no. 849ⁱ; FIG. 4, lower surface of leaf, $\times 10$, from Middletown, Frederick Co., Virginia, *Hunnewell*, no. 17,561; FIG. 5, fruiting nodes, $\times 1$, from no. 17,561; FIG. 6, calyx and capsule, $\times 2$, from north of Leavenworth, Crawford Co., Indiana, *Deam*, no. 33,429.

PLATES 861, 862 and 863. *R. CAROLINIENSIS* (Walt.) Steud., var. *TYPICA*. PLATE 861, FIG. 1, portion of flowering plant, $\times 1$, from Ormond, Florida, *H. A. Purdie*; FIG. 2, flowering tip, $\times 1$, from Brookgreen Gardens, Georgetown Co., South Carolina, *F. H. Tarbox*, no. 567; FIG. 3, summit of internode, $\times 4$, from no. 567; FIG. 4, lower surface of leaf, $\times 10$, from Green Cove Springs, Clay Co., Florida, *W. A. Murrill*; FIG. 5, upper surface of leaf, $\times 10$, from same specimen. PLATE 862, FIG. 1, portion of summit, with flowers hardly developed, $\times 1$, to show characteristic divergent branching, from Newberry, Alachua Co., Florida, *E. P. Walker*, no. 1862; FIG. 2, calyx and capsule, $\times 2$, from east of Eustis, Florida, *Small*, no. 8667; FIG. 3, portion of calyx and capsule, $\times 10$, from no. 8667. PLATE 863: copy of the plate, slightly reduced, of *R. strepens*, *capitulis comosis* of Dillenius.

PLATE 864. *R. CAROLINIENSIS*, var. *SEMICALVA* Fernald: FIG. 1, TYPE, $\times 3/7$; FIG. 2, portion of internode, $\times 10$, from TYPE; FIG. 3, lower surface of leaf, $\times 10$, from TYPE; FIG. 4, upper surface of leaf, $\times 10$, from TYPE; FIG. 5, calyx and capsule, $\times 2$, from Iola, Florida, May, 1896, *Chapman*; FIG. 6, calyx-segment and portion of capsule, $\times 10$, from last.

PLATES 865 and 866. *R. CAROLINIENSIS*, var. *MEMBRANACEA* Fernald: PLATE 865, FIG. 1, TYPE, $\times 1/2$; FIG. 2, upper surface of leaf, $\times 10$, from Savage Neck, Northampton Co., Virginia, *Fernald & Long*, no. 5453; FIG. 3, lower surface, $\times 10$, from no. 5453; FIG. 4, flowering tip, $\times 1.7$, from below Rushmere, Isle of Wight Co., Virginia, *Fernald & Long*, no. 13,150; FIG. 5, portion of calyx and capsule, $\times 10$, from no. 13,150; FIG. 6, fruiting summit, $\times 2$, from Claremont, Virginia, *Fernald & Long*, no. 13,837. PLATE 866, summits to show variations of leaves, $\times 1$: FIG. 1, from Little Creek, Princess Anne Co., Virginia, *Fernald & Long*, no. 4193; FIG. 2, from Congress Heights, District of Columbia, *Philip Dowell*, no. 7012; FIG. 3, from Cold Spring, Cape May Co., New Jersey, *C. S. Williamson*.

PLATE 867, FIGS. 1-3. *R. CAROLINIENSIS*, var. *MEMBRANACEA*, forma *HYPOPSILA* Fernald: FIG. 1, summit, $\times 1.7$, of TYPE; FIGS. 2 and 3, upper and lower surfaces of leaves, $\times 10$, from TYPE. FIGS. 4-6, forma *BREVIBERBIS* Fernald: FIG. 4, internode and leaves, $\times 1.7$, from Wolf Creek, Tennessee, *Kearney*, no. 863; FIGS. 5 and 6, upper and lower leaf-surfaces, $\times 10$, from no. 863.

PLATE 868. *R. CAROLINIENSIS*, var. *MEMBRANACEA*, forma *LAEVIOR* Fernald: FIG. 1, fruiting summit, $\times 1.7$, of TYPE; FIGS. 2 and 3, upper and lower surfaces of leaf, $\times 10$, from TYPE; FIG. 4, portion of calyx-segment and capsule, $\times 10$, from TYPE.

PLATE 869. *R. CAROLINIENSIS*, var. *NANELLA* Fernald: FIG. 1, TYPE, $\times 1$; FIGS. 2 and 3, upper and lower surfaces of leaf, $\times 10$, from TYPE; FIG. 4, flower-bud, with folded bract and 2 calyx-segments, $\times 10$, from TYPE; FIG. 5, portion of calyx-segment and capsule, $\times 10$, from TYPE.

PLATE 870, FIG. 1. *R. CAROLINIENSIS*, var. *NANELLA*: internode and base of leaf, $\times 4$, from TYPE. FIGS. 2-4, var. *NANELLA*, forma *ECILIATA* Fernald:

FIG. 2, TYPE, $\times 1$; FIG. 3, portion of leaf, bracts and internode, $\times 10$, from TYPE; FIG. 4, portion of calyx-segment and capsule, $\times 10$, from TYPE.

PLATES 871 and 872. *R. CAROLINIENSIS*, var. *CHELONIFORMIS* Fernald: PLATE 871, FIG. 1, TYPE, $\times 5/12$; FIG. 2, corolla, $\times 1$, from Cold Spring, Cape May Co., New Jersey, *Van Pelt*; FIG. 3, calyx and capsule, $\times 2$, from Virginia Beach, Virginia, *Fernald & Long*, no. 4191; FIG. 4, bract, calyx-segment and portion of capsule, $\times 10$, from no. 4191. PLATE 872: FIG. 1, summit, $\times 1$, from Scuppernong, Washington Co., North Carolina, *Correll*, no. 1918; FIG. 2, portion of summit, $\times 1$, from Cold Spring, New Jersey, *Van Pelt*; FIGS. 3 and 4, upper and lower leaf-surfaces, $\times 10$, from *Fernald & Long*, no. 4191.

PLATE 873. *R. CAROLINIENSIS*, var. *SALICINA* Fernald: FIG. 1, TYPE, $\times 4/7$; FIG. 2, summit of plant, $\times 1$, from Louisiana, *Steinhaur*; FIG. 3, plant, $\times 1$, from River Junction, Gadsden Co., Florida, *Wiegand & Manning*, no. 2933.

PLATES 874 and 875. *R. CAROLINIENSIS*, var. *DENTATA* (Nees) Fernald: PLATE 874, FIG. 1, small plant, $\times 2_5$, from Broadwater Bridge, Isle of Wight Co., Virginia, *Fernald & Long*, no. 13,460; FIG. 2, summit of branch, $\times 1$, from no. 13,460; FIG. 3, portion of fruiting branch, $\times 1/2$, from Rehoboth, Delaware, *Churchill*. PLATE 875, FIG. 1, upper fifth of main axis, $\times 1$, from Marsh's Millpond, Nansemond Co., Virginia, *Fernald & Long*, no. 14,414; FIG. 2, summit of branch, $\times 1$, from Sweeden, Edmonson Co., Kentucky, *E. L. Braun*, no. 3593.

REDISCOVERY OF *PARONYCHIA ARGYROCOMA*, var. *ALBIMONTANA* AT NEWBURYPORT, MASSACHUSETTS.—Gray's Manual, in noting the range of *Paronychia argyrocoma*, var. *albimontana*, states that it occurs locally on an island in the Merrimac River at Newburyport, Massachusetts. There is a specimen in the Gray Herbarium which Dr. Karl Castelhun collected at this station more than half a century ago; no record of a more recent collection being known, Dr. M. L. Fernald visited the locale to check on it in his work of rewriting the Manual for its next edition. He reported at a meeting of the New England Botanical Club that he found no trace of it. From such a careful botanist that seemed to me the final, undebatable fact and when, on June 4, 1944, I visited Carr's Island for the first time (it is a wild-life reservation of this commonwealth and posted against trespass) the *Paronychia* was the last thing I expected to find. Therefore, when I suddenly beheld a great ledge whose crevices were almost wholly clothed with a strange silver-green plant bearing a profusion of white, pinkish-tinted flowers of alpine appearance, my elation was great. Although I had never before seen the genus, many readings of its description had made me almost sure that this plant was the sought-for *Paronychia*. I at once dispatched a specimen to Dr. Fernald and that prompt gentleman confirmed my find by return mail. There may be some question of vandalism involved in the rediscovery of

this station but I trust its value in scientific aspect will be found to compensate the commonwealth for this intrusion. Since there are eight islands in the Merrimac River at Newburyport, it seems likely that the Fernald examination covered an island other than Carr's. I counted 112 clumps on the large ledge and 86 clumps on contiguous ledges, all within 20 feet of the water at high tide. One clump is so low on the ledge that it is submerged by the occasional 12-ft. tides of early spring.—FRANK J. MCGREGOR, Newburyport, Mass.

THERMOPSIS MOLLIS IN EASTERN MASSACHUSETTS.—In 1935, staying for a few days with a daughter living in Beverly, I got on a bus, careless of its destination. It passed close to a big sheet of water, then lost it. I jumped off. In a roadside stand I got a drink. The owner espied my "Gray" and began pumping me. Satisfied with my answers he told me he was brought up in Germany, that his mother dosed him with an herbal cure-all, that he had found a plant of it growing at the rear of his place. Would I look at it? It was *Achillea millefolium*. He told me I could go down a little-frequented road which led to the lake. I did so and found what was identified at a meeting of the New England Botanical Club as *Thermopsis mollis*. Perhaps I could have discovered other things but the mosquitoes were too powerful.

The past season, again from my daughter's, I made the same trip. The German was dead, his place closed, but I found the road which is about two hundred yards south of the murderer's stone standing at the edge of the sidewalk, opposite a cemetery, presumably the Wenham one, and running west. Getting permission to ignore a gate and after walking about three fourths of a mile, I found my plant in greater numbers and taller than previously (some in excess of five feet) disputing the ground with goldenrods, brambles, dogwoods and such like.

I should have liked to poke around but the mosquitoes again forbade.

Studying the topographic one-inch map, I imagine the location to be on the east side of the northern tip of Wenham Lake.—WILLIAM BIRRELL, Auburndale, Mass.

AUTHOR CITATION FOR *ERIOGONUM HEMIPTERUM*.—The recent use (Jour. Arn. Arb. **25**: 138. 1944) of the name *Eriogonum hemipterum* Torr. ex Stokes, Gen. Eriog. 21. 1936, brought to attention the matter of the author-citation.

The plant concerned was described as *E. hieracifolium* Benth. var. *hemipterum* T. & G., Proc. Am. Acad. **8**: 154. 1870. There Torrey and Gray listed as a synonym the herbarium name *Eriogonum hemipterum* Torr. In considering the plant as a species, Miss Stokes has (1) described it anew (as the Jour. Arn. Arb. indicates), (2) raised Torrey and Gray's variety to species rank, or (3) not effected a change at all.

That Miss Stokes was not intending to supply a new description for Torrey's herbarium name is quite evident both from the way the name is given (*Eriogonum hemipterum* Torr. in T. & G., Pr. 154) and from the lack of a Latin diagnosis, new species being regularly so accompanied in her 1936 work. This lack of the Latin diagnosis is probably the most tangible argument against accepting choice no. 1.

The spirit of the rules is more closely followed if Torrey and Gray's variety is raised to species rank and the subsequent author is given full responsibility, than if an herbarium name of Torrey is utilized in describing a new species when Torrey has concluded the plant to be a variety.

Inasmuch as Miss Stokes considered var. *hemipterum* T. & G. as a species, used the name *E. hemipterum*, and listed both the synonym which in more regular procedure would be unquestionably the name-bringing synonym, and the bibliographic reference, choice no. 2 is better than no. 3. The name, I think, should be *ERIOGONUM HEMIPTERUM* (T. & G.) Stokes, Gen. Eriog. 21. 1936.—GEORGE J. GOODMAN, Iowa State College, Ames, Iowa.

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